A MORBIDITY STUDY OF HEALTH RELATED RISK FACTORS OF BUS DRIVERS OF METROPOLITAN TRANSPORT CORPORATION LIMITED, CHENNAI 2014.

Dissertation submitted to

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M.D. BRANCH XV

COMMUNITY MEDICINE

THE TAMIL NADU Dr. MGR MEDICAL UNIVERSITY, CHENNAI, TAMILNADU.

APRIL – 2015

CERTIFICATE OF THE GUIDE

This is to certify that the dissertation titled "**A MORBIDITY STUDY OF HEALTH RELATED RISK FACTORS OF BUS DRIVERS OF METROPOLITAN TRANSPORT CORPORATION LIMITED, CHENNAI 2014"** is a bonafide work carried out by **Dr. S. SASIKALADEVI**, Post Graduate student in the Institute of Community Medicine, Madras Medical College, Chennai under my supervision and guidance towards partial fulfillment of the requirements for the degree of M.D.Branch XV Community Medicine and is being submitted to The Tamilnadu Dr.M.G.R. Medical University, Chennai.

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DECLARATION

I, solemnly declare that the dissertation titled **"A MORBIDITY STUDY OF HEALTH RELATED RISK FACTORS OF BUS DRIVERS OF METROPOLITAN TRANSPORT CORPORATION LIMITED , CHENNAI 2014"** was done by me under the guidance and supervision of **Dr.V.V.Anantharaman**,**B.Sc.,M.D.,M.Med.,M.B.A.,D.P.H.,D.D.,**Director, Institute of Community Medicine, Madras Medical College, Chennai. The dissertation is submitted to the Tamilnadu Dr. M.G.R. Medical University towards the partial fulfillment of the requirement for the award of M.D. degree (Branch XV) in Community Medicine.

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ABBREVIATIONS

AC	-	Air conditioned
BMI	-	Body mass index
BP	-	Blood pressure
CVS	-	Cardiovascular system
DBP	-	Diastolic blood pressure
DM	-	Diabetes mellitus
ECG	-	Electrocardiogram
HT	-	Hypertension
IRT	-	Institute of Road Transport
MTC	-	Metropolitan Transport Corporation
NHS	-	Normal heart sound
NIOSH	-	National Institute of Occupational Safety and Health
NVBS	-	Normal vesicular breath sounds
RS	-	Respiratory system
SBP	-	Systolic blood pressure
USA	-	United states of America
WHO	-	World health organisation

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"A MORBIDITY STUDY OF HEALTH RELATED RISK FACTORS OF BUS DRIVERS OF METROPOLITAN TRANSPORT CORPORATION LIMITED, CHENNAI 2014"

ABSTRACT

Background: The health of bus drivers is significant in public health, transport policy and their employment condition. Preventing health related risk factors of bus drivers enhances the value of human resources in the organization, enhances productivity and prevents under utilization of services and also loss of skills of driver. In this study, an attempt was made to assess the magnitude of morbidities among the bus drivers of Metropolitan Transport Corporation Limited. The study also explored the health related risk factors associated with these morbidities. **Objectives :** To assess the morbidity pattern among bus drivers of Metropolitan Transport Corporation, Chennai by conducting health examination 2014. To study the associated risk factors for the morbidities prevailing among the same bus drivers. **Materials and Methods:** Cross sectional study was conducted in the bus drivers of Metropolitan Transport Corporation Limited using a multistage random sampling technique from January 2014 to June 2014. About 422 bus drivers participated in the study. A validated semi-structured questionnaire was used and health examination was done. **Results:** The analysis revealed the fact that the mean age of bus drivers was 42.32 years, 85.3% of the respondents were not tobacco users, 76.8% were not smokers,54.5% have not used alcohol 56.2 have not suffered from any chronic disease in the past. However 41.1% were with overweight, 61.4% skipped the morning breakfast, 66.8% never did any exercise, 18.5% suffered diabetes, 12.8% suffered from hypertension and 9.2% acid peptic disease. 2.8% chest pain, 24.6% heart burn, 5.7% abdominal pain, 19.2% back pain, 18.3% joint pain, 24.2% pain in arms and legs, 10.9% neck pain, 18.2% fatigue, 25.6% visual impairment, 0.9% hearing defect, 18% loss of sleep,2.8% breathlessness and 5.7% other complaints. The association between age and other chronic diseases was examined by using chi square test. The association between health risk factors and chronic diseases were also examined by using chi square test. There was a significant association between age and obesity, age and back pain, age and joint pain, age and hypertension, age and visual defect. There was found to be a statistical significance between skipping of morning breakfast and acid peptic disease. There was also a statistical association between family history and hypertension, obesity and hypertension, tobacco use and hypertension. There was also a statistical association between age and diabetes mellitus, physical exercise and diabetes mellitus, family history and diabetes mellitus. **Discussion**: The analysis and interpretation of the primary data collected revealed the fact that there are health risk factors associated with driving in general and bus driving in particular. The health risk factors are possibility for hypertension, diabetes mellitus, cardiovascular diseases, obesity, visual impairment, declining professional efficiency on account of diabetes mellitus, backache etc and these risk factors are preventable.

Key words: bus drivers, morbidity, health risk factors, Chennai.

1. INTRODUCTION

"Wealth of a nation lies in the health of its citizens".[1]

The job of bus driving is not only risky due to probable accidents and incidents but also risky due to probable health risk factors associated with the nature of bus driving. Bus drivers at the time of recruitment shall be of good health, standard physique, minimum prescribed educational qualification with a skill of driving heavy passenger vehicles. Mentally and physically a driver should be perfectly all right. A driver has to pay 100% concentration on driving because there may be unexpected actions and reactions of other vehicles on the road, sudden instructions from his conductor, the problems of passersby on the road, instructions of traffic regulators, development of technical snag in the vehicle and many other unforeseen contingencies created by animals and birds which contribute tension and stress on the job of bus driving.

A driver of a passenger bus has to sit continuously over a period of time as per the requirement and to drive the bus with the required speed irrespective of the fact that day light is sometimes poor, night hours with poor head light, cloudy, foggy, rainy times and sometimes on unsafe and uneven road conditions which probably may result in impairment of eye sight, hearing ability and many other health disorders. While on job the drivers may forego their scheduled diet and rest because of the need to do duty as per time schedule.

Bus driving is considered to be one of the most responsible skilled works as the drivers of the buses are expected to safeguard themselves, the passengers on the

bus, the very bus, other men, animals and vehicles on the road and has to maintain the time schedule irrespective of the difficulties they face. Inability and sudden disability due to illness cannot be cited as a reason for not fulfilling the given responsibility. Therefore to be vigilant always on duty and to avoid in total the feeling of sleep they use to take hot drinks of tea and coffee as and when possible. Besides they are accustomed of taking oily snacks and tobacco related materials to avoid the feeling of sleep. These health risk factors may diminish the bus drivers' health status. Unless the drivers resort to preventive and curative measures, they may not be able to drive heavy passenger vehicles till the age of 58 i.e. the retirement age.

There is a possibility for the formation of excessive adipose tissue in the abdomen of the drivers as they have to sit continuously over long hours in a day. Excessive body mass index due to unscheduled diet, consumption of oily snacks, non vegetarian foods, use of tobacco related items etc, back pain due to driving on jolts and forward bending of the body over a long hours in a day, visual impairment due to lights they have to face while driving during night times and frequently shifting their eye focus from short sight to long sight and vice versa ,hearing impairment due to noise pollution ,neck pain due to turning the neck frequently while driving and knee pain as they have to keep their legs folded for a long period are the difficulties encounted by a driver. Among various possibilities of risk factors, the formation of adipose tissue and excessive body mass index may lead to hypertension, diabetes mellitus and coronary heart disease.

The health risk factors may be avoided by prevention as well as curative measures. Prevention is better than curative measures. The probable preventive

measures may be periodical medical examination, counselling by experts other than physicians, changes in lifestyle, food habits, resting times, physical exercise in leisure times and so on.

Therefore it is imperative to examine the health risk factors and to see whether the drivers have been driving the vehicle with health risk factors. A statistical survey, clinical examination ,observation of the drivers and the response of the drivers may bring out the facts for the health risk factors and such factors are available by means of primary data and the analysis and interpretation of primary data may lead to certain conclusions which may enable to suggest preventive and curative measures.

A periodical health check up may be undertaken by the drivers to adopt preventive and curative measures to maintain good health. Good health and good driving are inseparable and as such this cross sectional study is proposed to examine the health status of bus drivers on selective basis by applying health indicators on a given point of time.

Objectives

2. OBJECTIVES

1. To assess the morbidity pattern among bus drivers of Metropolitan Transport Corporation, Chennai by conducting health examination 2014.

2 To study the associated risk factors for the morbidities prevailing among the same bus drivers.

Justification

3. JUSTIFICATION

1. The health of bus drivers is significant in public health, transport policy and their employment condition.

2. Over the last few decades there has been deterioration in the working condition of bus drivers. [2] The circumstance that damages the health of bus drivers is unacceptable and needs immediate care for taking curative action.

3. More specifically the available literature indicates three main disease categories in bus drivers; cardiovascular problems, digestive problems and musculoskeletal problems. [3]

4. Examining and preventing health problems preserves quality of service of bus drivers, safety to passengers of bus and others on road can be ensured by means of safe driving by drivers of sound mind and sound body. [4]

5. Preventing health risk factors of bus drivers enhances the value of human resources in the organization, enhances productivity and prevents under utilization of services and also loss of skills of drivers. [4]

6. The health risk factors in driving is an area of neglect that needs urgent attention to take concerted effort to target those factors that causes poor health especially in a developing country like ours.

7. Very few studies have been done among bus drivers of Chennai.

Review of Literature

4. REVIEW OF LITERATURE

Need to address the health of bus drivers

- The safe driving practices of bus drivers were related to the health behaviour patterns of the bus drivers.[4]
- Drivers who are physically fit and well continue to maintain high levels of alertness and attention while driving.[4]
- From a humanitarian perspective preventing the health problems of bus drivers preserves valuable employees.[4]
- The productivity levels of the bus drivers can be higher if they are well and fit and if they are healthy tend to have a fewer absence from duty due to illness or injury .[4]
- Promoting good health among drivers help their families and employees also too to adopt a healthy life approach.[4]

Most important threats and risks to drivers' health and fitness

Direct costs : They are those that involves bus drivers health care and maintenance.[4]

Indirect costs: They are those that are indirectly attributable to health related matters of bus drivers like employees job satisfaction and turnover. [4]

Common health risks of bus drivers include:

- Smoking
- Tobacco use
- Alcohol consumption
- Obesity
- Hypertension
- Poor eating habits, diet and nutrition.[4]

Studies on health risks factors and morbidities of bus drivers

The professional work of bus drivers is such that their health status has a great influence on public safety.[5]The job of bus driving involves a combination of busy traffic, tight working schedule and impatient passengers which can lead to stress while working.[6]

Workers in transportation industry have a greater risk towards incorrect diet and sedentary behaviour.[7] In a study conducted by Andreia farias alquimim et al most drivers said that there has been an increased consumption of snacks after entering into the profession of driving .In this study the prevalence of dietary consumption of bus drivers was excessive consumption of sugar 66%, consumption of fat 64.2% , consumption of coffee 69.8%,consumption of salt 60.4%, consumption of coke 64% and consumption of soda 54.7%.[8]

A study done by J.Hedtmann et al showed that regular skipping of meals as a loss of eating culture among professional drivers. To compensate skipping of meals

the drivers took snacks.[9]The loss of eating culture that have led to the loss of connection between intake of food and social activities have contributed to the health risk of bus drivers considerably. In Lawton et al study the meal time and menu composition was strongly influenced by stress, hunger and fatigue rather than planning and intention of the bus drivers.[9]

There is an understanding in the group of professional drivers on the need for changes in nutrition habits but most of them fail to convert their understanding into action. For development of effective preventive program the occupational conditions has to be taken into account.[9]

Sedentary work was done by many professional drivers and they were found to be physically inactive during their leisure time.[10]The profession of bus drivers involves less weight management as bus drivers may engage to less healthy weight management behaviours. Working condition of bus operators involves long sitting hours, time pressure, variable shifts which lead to an increase in risk for obesity and hypertension which in turn are known risk factors for diabetes.[11]

There was found to be a higher mortality, morbidity and absenteeism rates due to obesity particularly in bus drivers.[12]Obesity is considered one of main risk factors of hypertension and is more prevalent among professional drivers.[13, 14] The health risk factors of bus drivers are contributed to stress involved in occupation, less physical activity, prolonged working hours and dietary habits that are inappropriate.[14, 15]

With an intensified availability of low – cost-high calorie foods and with an increase in number of persons leading a physically inactive life, obesity has become a global epidemic.[16]

Previous studies have found out that prevalence of overweight to be 63% with overweight being an important risk factor for several chronic diseases among professional drivers.[17]A set of investigations by Z.B Belkic et al , Netterstrom & Juel, Rosengren et al proved the coherence of obesity and morbidity particularly among professional drivers.[18]In a study conducted by K.H.Escoto et al seven hundred and sixty bus drivers were surveyed in which the mean body mass index was 32.7 kg/m2 and 58 % of drivers were classified as obese.[19]

Studies have shown that among professional bus drivers there is increased prevalence of hypertension.[20]Hypertension and stress were related to physical inactivity, poor diet and to physical and mental tirednesss.[8]Proper maintenance of weight and avoidance of excessive salt intake helps in prevention of hypertension. Kidney problems were related to hypertension.[8]

Hypertension was significantly associated with higher levels of body mass index, waist circumference, blood glucose .[8]In a study conducted by Nazanin izadi et al the prevalence of hypertension among professional drivers was found to be 16.4%.The prevalence of hypertension increases with age.[21]High blood pressure is another risk factor for diabetes among professional bus drivers.[21]

In U.S. people who are with diabetes mellitus were subjected to licensing requirements and restrictions.[22] Hypoglycaemia which indicates an impaired ability to drive, impaired vision and neuropathy which affects the ability to feel foot petals each of which can have a impact on driving safety.[23]Complications due to diabetes and medications side effect both can affect skills of a driver. [24]

The profession of driving has also been associated with increased risk of cardiovascular disease and also an increase in cerebrovascular disease.[25, 26, 27] Drivers who carry passengers are at an increased risk compared to drivers who carry goods.[28,]

Occurrence of traffic accidents are contributed considerably to the behavioural factors among professional drivers. As per the World Health Organisation estimates the number of deaths due to traffic accidents will increase by 65% between 2000 and 2020 and in developing countries it will increase as high as 80%.[29]

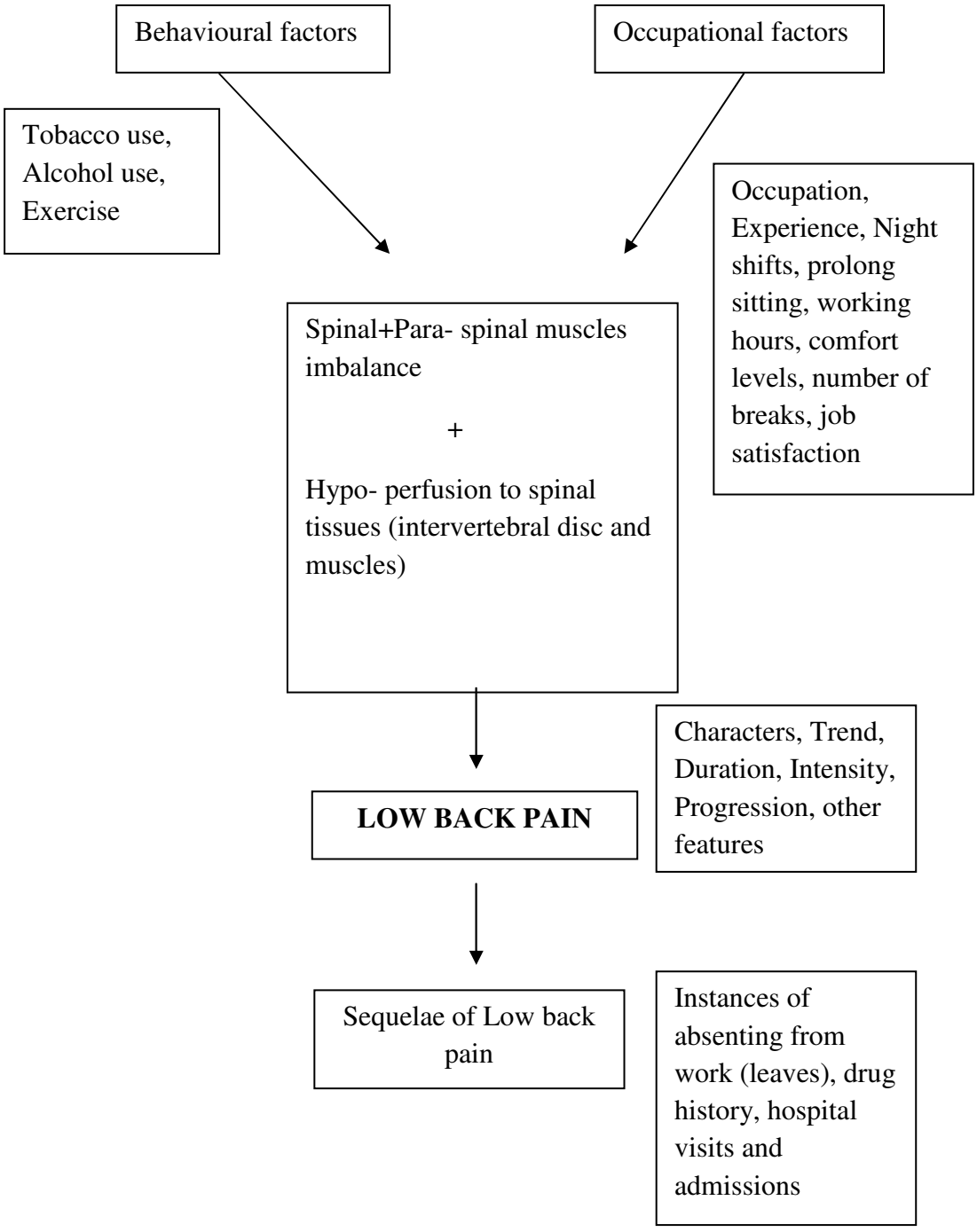
In a study conducted by Hamid R Saberi et al in Kashan, Iran there was found to be a high prevalence of metabolic syndrome and also an increased occurrence of other relevant risk factors for cardiovascular diseases among bus and truck drivers.[15]

Metabolic syndrome or X syndrome is associated with the combination of abdominal obesity, increased levels of fasting blood glucose, increased blood pressure and low high density lipo-protein levels.[30, 31] Based on the findings of Hamid R Saberi et al it was recommended that pertinent health regulations be established, training programs to be considered and metabolic syndrome complication to be focussed in high risk groups of drivers to improve and maintain their quality of life. [15]

Those with metabolic syndrome are at increased risk of diabetes, dyslipidaemia, stroke, osteoarthritis, cancers and their consequent morbidity and mortality. As a result of these events the quality of life is impaired and it imposes a heavy burden of expenses to the health care system.[30, 31, 32] The specific working conditions of the drivers make them to be more likely to be involved in metabolic syndrome and their complications[15].Some evidence has been reported that smokers are at risk of developing metabolic syndrome than non smokers.[33]Visual acuity had demonstrated significant relationships with crash rates in older drivers. Visual acuity has effects on driving performances and safety in professional driving.[34]

It has been shown by studies that compared to general population lower back disorders are more common in vehicle operators. Low back pain among bus drivers has lead to prevention in their normal and social activities.[35]As per WHO report on global health risk states that 37% of low back pain was attributed to the occupational risk factors .Low back pain has been attributed to following five factors according to National Institute of Occupational Safety and Health (NIOSH-USA) –heavy physical work, bending and twisting (awkward postures), lifting and forceful movements, whole body vibration and static work postures. In a few studies higher prevalence of low back pain is attributed mostly to vibration exposures and prolonged awkward sittings. It has been suggested that the risk of low back pain among bus drivers have been related to unhealthy lifestyle of bus drivers, tobacco and alcohol use, physical inactivity, over eating and back postures.[36]

Figure 1: Low Back Pain



In a study conducted by Deborah Alperovitch- Najenson et al lower back, neck, shoulder and knee were found to be the four common areas of musculoskeletal symptoms.[37]

Out of the 4202 drivers who underwent health check-up at the Institute of Road Transport, Perundurai Medical College cum Hospital, Tamilnadu till September 4,2013,1720 drivers were found to have diabetes mellitus, 921 drivers were found have hypertension,184 were found to have ischemic heart disease. Only 1,392 drivers were found to be clinically normal .603 drivers were diagnosed with osteoarthritis, 227 drivers were diagnosed with lumbar spondylitis, 103 drivers were found to have periarthritis shoulder and 96 drivers were found to have cervical spondylitis.[38]

Materials & Methods

5. MATERIALS AND METHODS

Study Design

This study was done as a cross sectional descriptive study on the prevalence of morbidities among bus drivers and their associated health risk factors

Study area and population

The study was planned among bus drivers of the bus depots of Metropolitan Transport Corporation Limited, Chennai. There were 25 bus depots and there were 9514 bus drivers in Metropolitan Transport Corporation Limited Chennai. The following five depots were selected on simple random basis by lottery method from the 25 depots namely Madhavaram, T.Nagar, Tambaram, Vadapalani and Adyar for the study purpose. The list of bus drivers was obtained from Metropolitan Transport Corporation Limited Chennai

Study period

The study was conducted during the period between January 2014 and June 2014.

Sample Size

The sample size was calculated based on the assumption where the prevalence was 50%. Considering Confidence level of 95%, absolute precision of 5% [39] with 10% excess sampling to account for non- response, the sample size derived was 422

Sample size was calculated using the formula: $N = Z_{1-\alpha}^2 pq/d^2$

Where, $Z_{1-\alpha}$ = standard normal deviant at 95% confidence level i.e. 1.96

p = prevalence =50%

d = absolute precision of 5%.

$N = (1.96)^2 * 0.5*0.5/ (.05)^2 = 384.16 \sim 384$

Allowing a 10% non-response rate the sample size came around 422.

Sampling Method

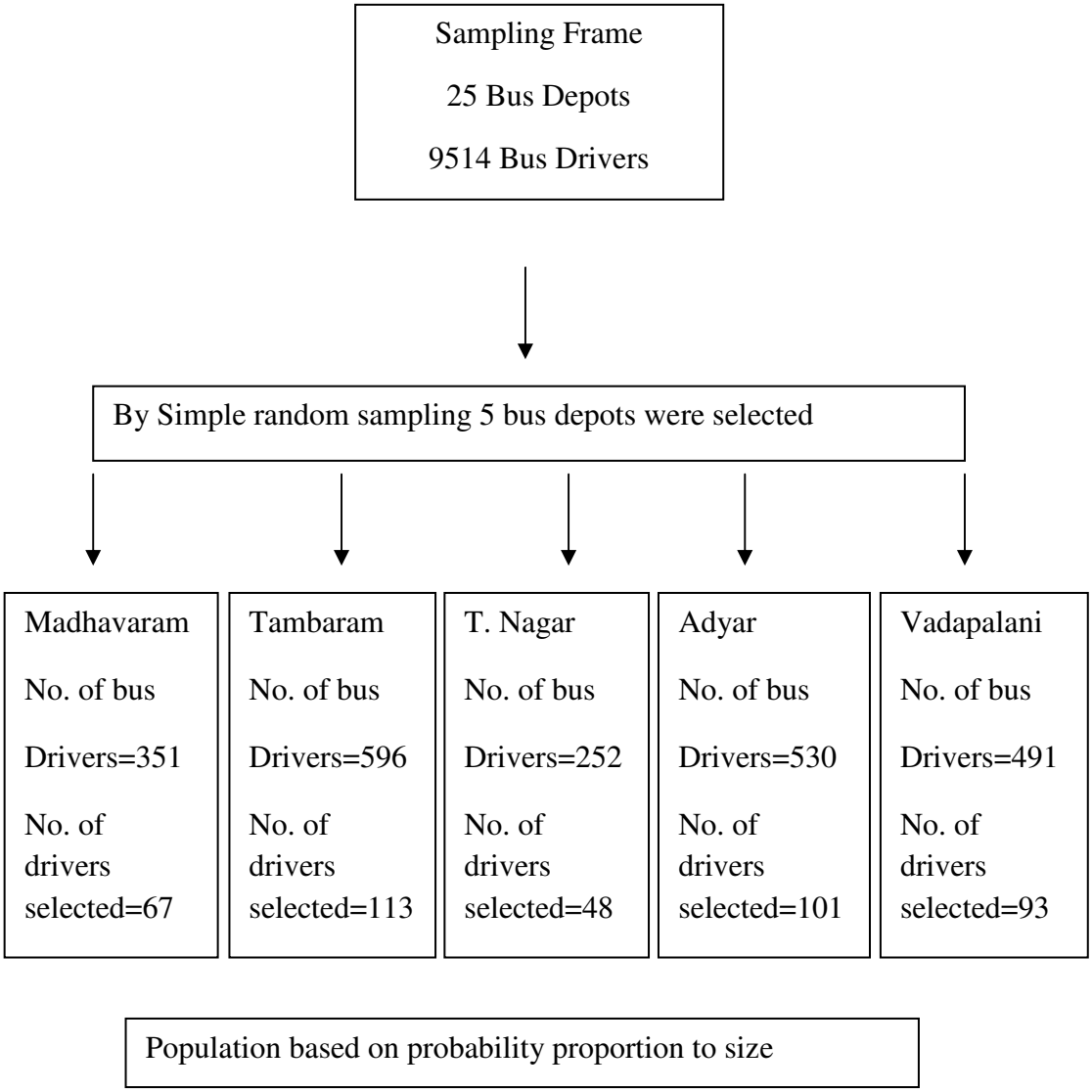
Multistage sampling method was used.

First stage: Chennai district was selected from Tamilnadu by simple random sampling

Second stage: Metropolitan Transport Corporation Limited was selected from Chennai district by simple random sampling.

Third stage: Five bus depots were selected by simple random sampling method from 25 depots of Chennai Metropolitan Transport Corporation.

Fourth stage: Based on probability proportionate to size technique bus drivers were selected from each of 5 depots by simple random sampling.


Sampling Frame
25 Bus Depots
9514 Bus Drivers
By Simple random sampling 5 bus depots were selected
Madhavaram
No. of bus
Drivers=351
No. of drivers selected=67
Tambaram
No. of bus
Drivers=596
No. of drivers selected=113
T. Nagar
No. of bus
Drivers=252
No. of drivers selected=48
Adyar
No. of bus
Drivers=530
No. of drivers selected=101
Vadapalani
No. of bus
Drivers=491
No. of drivers selected=93
Population based on probability proportion to size

Inclusion Criteria

1) All bus drivers of Chennai Metropolitan Transport Corporation Limited of selected bus depots.

Exclusion Criteria

1) Bus drivers who were not willing to participate.

Methodology

Validated semi-structured questionnaire was used. The questionnaire contained questions on basic socio demographic profile, lifestyle factors, history and clinical examination.

Height

The height was recorded with the individuals against height scale marked in centimeters without footwear, occiput, buttocks &back foot touching the wall looking straight and forward. The upper limit which recorded to the nearest single decimal point was taken as height of the individual.

Weight

Weight was recorded without footwear and minimal clothing. Before each reading zero error was checked

Body mass index

Body Mass Index (BMI) was calculated by the formula weight in kg/ (height in meter) $^{2.}$Bus drivers with body mass index between 25 and 29.99 were considered to be pre –obese and bus drivers with body mass index more than 30 were considered to be obese.[40]

Blood pressure

- Blood pressure was measured by using the sphygmomanometer, in sitting position, two times over a period of ten minutes and the lowest reading was recorded.
- Bus drivers with systolic blood pressure of less than 120 mm of Hg and diastolic blood pressure of less than 80 mm of Hg were considered to have normal blood pressure.
- Bus drivers with systolic blood pressure of 120-139 mm of Hg and a diastolic blood pressure of 80-90 mm of Hg were considered to be pre-hypertensive.
- Bus drivers with systolic blood pressure 140-159 mm of Hg and a diastolic blood pressure of 90-99 mm of Hg were considered to be in stage I hypertension.
- Bus drivers with systolic blood pressure of more than 160 mm of Hg and a diastolic blood pressure of more than 100 mm of Hg were considered to be in stage II hypertension.[40]

Vision

- Snellen's chart was used to detect vision of bus drivers.
- The bus drivers were asked to cover one eye and were asked to read aloud the letters of each row of the Snellens chart beginning at the top from a distance of 6 meter.
- The smallest row that could be read accurately indicates the visual acuity in that eye.
- This was done for the other eye also in the same manner.
- Bus drivers with visual acuity of less than 6/18 were considered to have mild or no visual impairment.
- Bus drives with visual acuity between 6/18 to 6/60 were considered to have moderate visual impairment.
- Bus drivers with visual acuity between 6/60 and 3/60 were considered having severe visual impairment.[40]

Hearing

- Tuning fork was used to detect hearing among bus drivers.
- Webers test was done to detect hearing.
- In the Weber test a vibrating tuning fork of 512Hz was placed in the middle of the fore head.
- The bus drivers were asked to report in which ear sound was heard better.
- A normal Weber test has a bus driver reporting the sound heard equally in both the ears.
- In an affected person if the defective ear hears the Weber tuning fork louder the finding indicates a conductive hearing loss in the defective ear.

- In an affected person if the normal ear hears the tuning fork sound better there was sensorineural hearing loss on the other ear.[41]

Urine dipstick test

- The test method consisted of immersing the test strip completely in a well mixed sample of urine then it is taken out of the container, supporting the edge of the strip over the mouth of the container to remove excess of urine.
- The strip was then allowed to stand for 1 to 2 minutes for the reactions to occur.
- The colours that appear are compared against the chromatic scale provided by the manufacturer.

Clinical Examination

- Physical examination was carried out to detect any disease condition.
- System wise examination which included cardiovascular system, respiratory system and abdomen was assessed as for any adult.

Data collection

- Official permission to conduct the study in bus drivers was obtained from the Dean MMC, the Director of Institute of community Medicine, the Managing Director, Metropolitan Transport Corporation Limited, Chennai and the Institutional Ethics Committee.
- After obtaining the informed consent from the bus drivers, the semi-structured questionnaire was administered to bus drivers.
- Driver's health examination was conducted at bus depot premises in liaison with Metropolitan Transport Corporation Limited, Chennai.

Analysis:

- The data were entered in MS Excel and were analyzed using SPSS Version 21.
- Appropriate descriptive and inferential statistics were used to analyze the data p value of <0.05 was considered statistically significant

Operational definitions

Cardiovascular symptoms

Those drivers who had a history of chest pain and breathlessness.

Respiratory symptoms and signs

Those drivers who had cough, breathlessness and on auscultation were found to have wheeze and crepitations.

Acid peptic disease

Those drivers who had heart burn, abdominal pain and tenderness.

Oily snacks

Intake of vadai, bajji, bonda, murukku and samosa.

Data analysis & Results

6. DATA ANALYSIS & RESULTS

From the information obtained by means of questionnaire from 422 bus drivers statistical analysis have been made and the results of the analysis have been stated in the following paragraphs.

Table 1: Socio demographic particulars (n =422)

Socio demographic particulars		**N**	**%**
Age(n=422)	less than 30 yrs	25	5.95
	31 to 40 yrs	158	37.45
	41 to 50 yrs	150	35.5
	Above 50 yrs	89	21.1
	Total	422	100.0
Education (n=422)	up to 10th standard	180	42.7
	11^{th},12^{th}	152	36.0
	Diploma	51	12.1
	Degree	39	9.2
	Total	422	100.0

Socio demographic particulars		N	%
Service (n=422)	less than 10yrs	161	38.1
	11 to 20yrs	145	34.4
	21 to 30yrs	79	18.7
	above 30yrs	37	8.8
	Total	422	100.0
Type of bus(n=422)	green board	97	23.0
	white board	237	56.2
	yellow board	25	5.9
	red board	5	1.2
	Digital	53	12.5
	AC bus	5	1.2
	Total	422	100.0

Socio demographic particulars

As per figure -2, 21.1%of the respondents were above 50 yrs of age, 35.5%in between 41 and 50 yrs, 37.4%in between 31and 40 yrs and 5.9%were less than 30 yrs of age. The single largest group of respondents was in between 31 and 40 yrs of age. The mean age of the respondents was 42.32yrs.

Figure 2: Classification based on age of bus drivers (n =422)

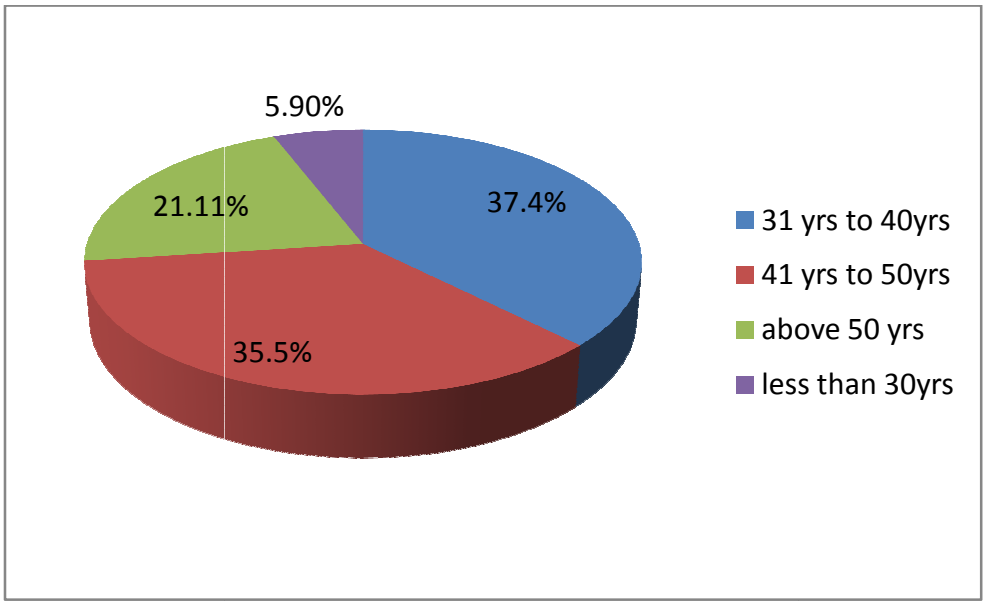


Figure 3: Classification of bus drivers on the basis of educational qualification (n=422)

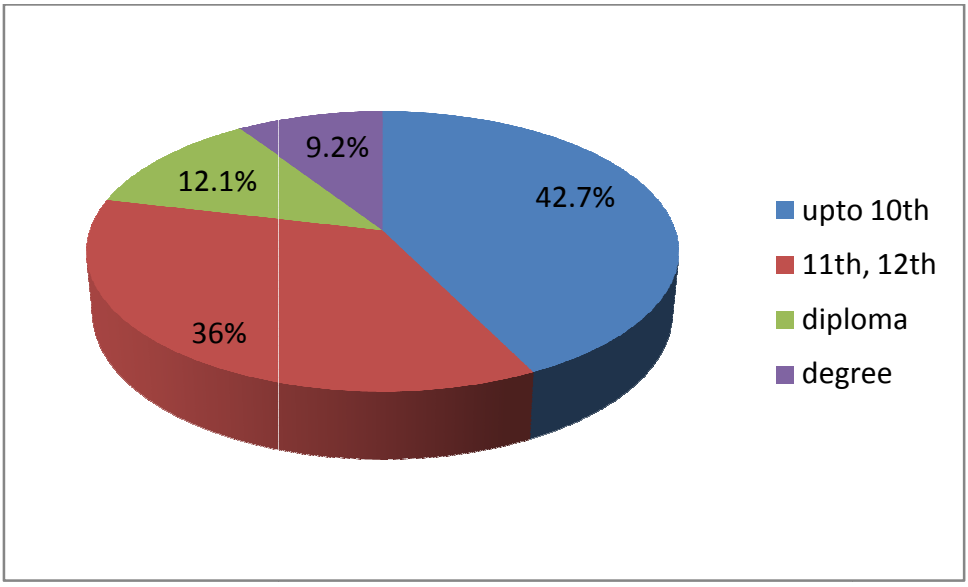
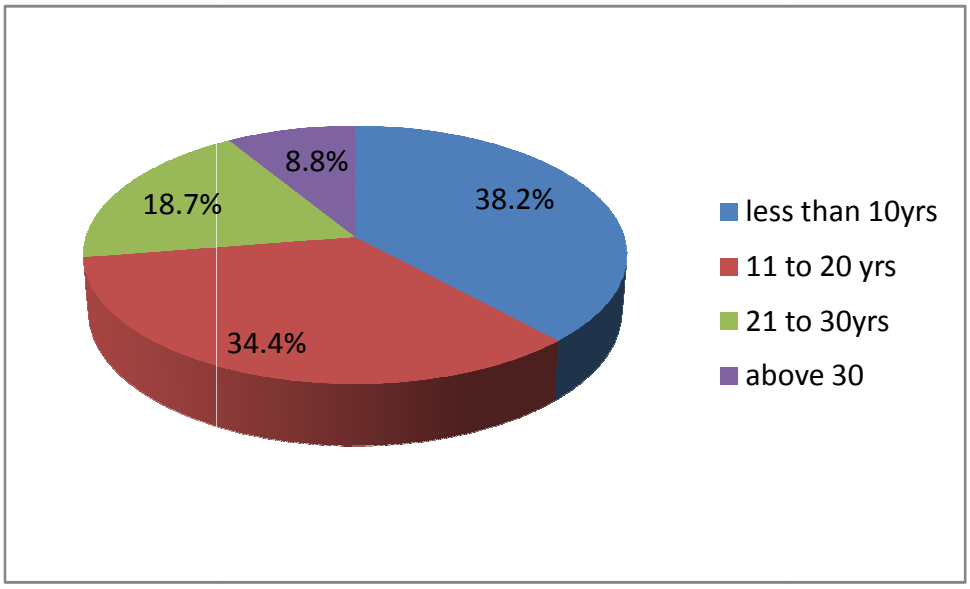


Figure-3 shows that 42.7% of respondents were up to 10th standard, 36%upto plus two, 12.1% were diploma holders and 9.2%were degree holders. Up to 10th standard educational qualification was the single largest group of respondents. 2/3 rd respondents were only up to school education.

The figure-4 shows that 38.2%of the respondents were less than 10 yrs of service, 34.4% above 11 but less than 20 yrs of service, 18.7% above 21 and below 30 yrs of service, 8.8% were above 30 yrs of service. Below 10 yrs of service is the single largest group of respondents

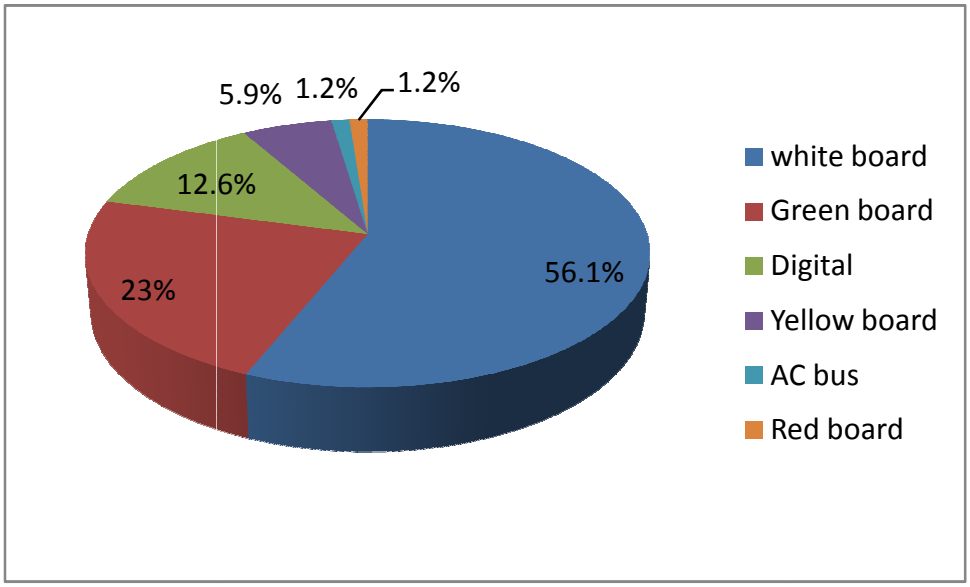
Figure 4: Classification of the bus drivers on the basis of their driving service

(n =422)



The buses were classified as green board express bus, white board ordinary fare bus, yellow board mini bus, red board ladies bus, and digital board and AC bus by the transport corporation. As per figure -5, 23% of the respondents drive green board, 56.2% white board, 5.9% yellow board, 1.2% red board ,12.6% digital and 1.2% AC bus . Thus, majority of the respondents drive white board buses.

Figure 5: Classification based on type of service (n =422)



Smoking habits of the respondents:

The smoking habits of the respondents were shown in table-2. As per table-2, 76.8% respondents were not smokers, 5 % smoked once in a week and 18.2%were daily smokers. Of the smokers 59.2% respondents smoked cigarette and 40.8% of smokers used bidi .of the smokers 70.4%used less than 5 sticks in a day, 22.4%used 6-10sticks in a day, only 1 %used11 to 15 sticks a day and 6.1% 16 to 20 sticks in a day. Of the smokers 61.2% use less than 150 sticks in a month, 31.6%used more than 151 and less than 300 sticks in a month and only 1 % uses more than 300 but less than 450 sticks in a month. Of the smokers 80.6% started smoking when they were below 25 yrs of age, 14.3% more than 26 but less than35 yrs, 4.1% above 36 but less than 45 yrs and only 1 % above 46 yrs of age. Thus 4/5th of the smokers started smoking below 25 yrs of age.

Table 2: Prevalence of smoking and frequency (n =422)

Smoking habits		**N**	**%**
Current smoking(n=422)	yes daily	77	18.2
	yes once a week	21	5.0
	No	324	76.8
	Total	422	100.0
Form of smoking(n=98)	Cigarette	58	59.2
	Bidi	40	40.8
	Others	0	.0
	Total	98	100.0
No. Of sticks per day(n=98)	0 – 5	69	70.45
	6 – 10	22	22.45
	11 – 15	1	1.0
	16 – 20	6	6.1
	21 or more	0	.0
	Total	98	100.0

Continued.. Table 2: Prevalence of smoking and frequency (n =422)

No. Of sticks per month(n=98)	0 – 150	60	61.25
	151 – 300	31	31.65
	301 – 450	1	1.0
	451 – 600	6	6.1
	601 or more	0	.0
	Total	98	100.0
Starting age of smoking(n=98)	<= 25 yrs	79	80.6
	26 - 35 yrs	14	14.3
	36 - 45 yrs	4	4.1
	46 or more	1	1.0
	Total	98	100.0

The use of tobacco by the respondents has been shown in table-3. Of the respondents 85.3% were not tobacco users, 12.8% used daily and 1.9% used once in a week. Of the tobacco users 98.4% used tobacco with betel nut and 1.6% used only tobacco. Of the tobacco users 53.2% used tobacco for the last 5 yrs or so, 24.2%used tobacco between 6 and 10 yrs, 12.9% used tobacco above 16 yrs but below 20 yrs and 1.6 % used tobacco for more than 21 yrs. Of the tobacco users 75.8% used tobacco at or less than 5 times in a day, 21% more than 5 but less than 10 times , 1.6% each more than 11 but less than 16 times and more than 16 and less than 20.

Table3: Prevalence of tobacco and betel nut chewing (n =422)

Tobacco use		**N**	**%**
Current tobacco use(n=422)	yes daily	54	12.8
	yes once a week	8	1.9
	no	360	85.3
	Total	422	100.0
Tobacco with betel nut(n=62)	yes	61	98.4
	no	1	1.6
	Total	62	100.0
Tobacco use in years(n=62)	0 - 5yrs	33	53.2
	6 - 10yrs	15	24.2
	11 - 15yrs	8	12.9
	16 - 20yrs	5	8.1
	21 or more	1	1.6
	Total	62	100.0
Tobacco frequency in a day(n=62)	0 - 5	47	75.8
	6 - 10	13	21.0
	11 – 15	1	1.6
	16 – 20	1	1.6
	21 or more	0	.0
	Total	62	100.0

As per table -4, 54.5% of the respondents did not use alcohol where as the remaining did use. Of the alcohol users 82.3% drank brandy, 4.7% drank whisky, 12% drank beer, and 1% drank other hot drinks. Thus 4/5th of the alcohol users drank brandy. Of the alcohol users 45.3% drank alcohol for the last 5 yrs, 35.9% drank for more than 6yrs but less than 10 yrs, 7.3% drank for more than 10 yrs but less than 15 yrs, and 8.9% drank for more than 16 yrs but less than 20 yrs and 2.6 % use for more than 21 yrs. Of the alcohol users 54.2% drank once in a week, 26.6% twice in a week, 6.8% thrice in a week, 4.2% 4 times in a week, 2.6% 5 times in a week and 3.6% used all the days of a week.

Of the alcohol users 0.5%took 45 ml, 9.4% took 60 ml, 22.4% took 90 ml, 0.5% 100 ml, 46.4% 180ml, 0.5%190 ml, 0.5% 300 ml, 9.4% 360ml, 8.9% 650 ml, 0.5% 720 ml and only 1% took 1300ml.

Table4: Prevalence of alcohol intake (n =422)

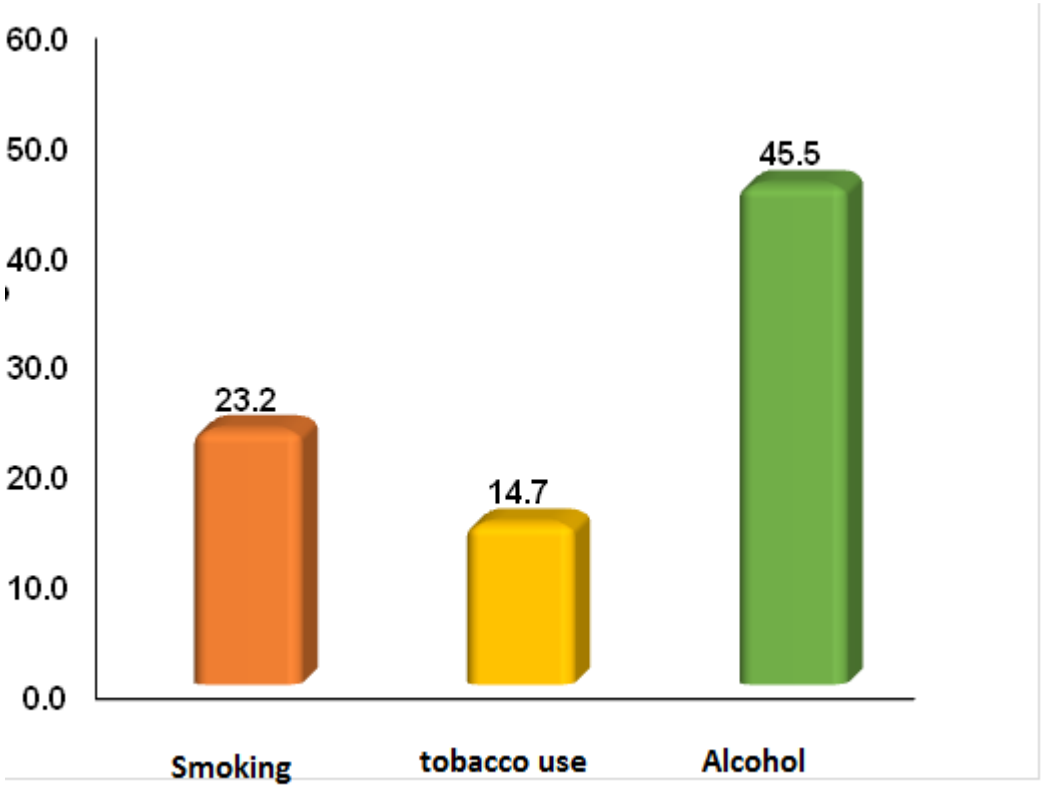
Alcohol intake		**N**	**%**
Alcohol usage(n=422)	Yes	192	45.5
	No	230	54.5
	Total	422	100.0
Type of alcohol(n=192)	Brandy	158	82.3
	Whisky	9	4.7
	Beer	23	12.0
	Others	2	1.0
	Total	192	100.0
alcohol use in years(n=192)	0 - 5yrs	87	45.3
	6 - 10yrs	69	35.9
	11 - 15yrs	14	7.3
	16 - 20yrs	17	8.9
	21 or more	5	2.6
	Total	192	100.0
Frequency of alcohol per week(n=192)	1	104	54.2
	2	51	26.6
	3	13	6.8
	4	8	4.2
	5	5	2.6
	6	2	1.0
	7	7	3.6
	12	2	1.0
	Total	192	100.0

(Continue...) table4: Prevalence of alcohol intake

		N	%
Amount of alcohol(n=192)	45	1	.5
	60	18	9.4
	90	43	22.4
	100	1	.5
	180	89	46.4
	190	1	.5
	300	1	.5
	360	18	9.4
	650	17	8.9
	720	1	.5
	1300	2	1.0
	Total	192.0	100

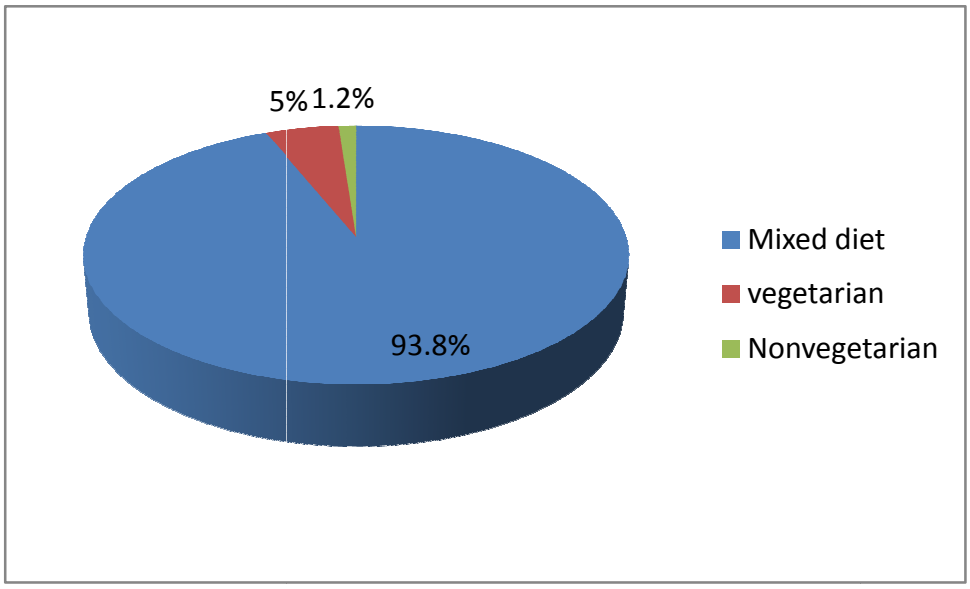
As per the figure 6 smoking was found in 23.2% of the respondents, tobacco and betel nut chewing in 14.7 % of the respondents and 45.5% were found to consume alcohol.

Figure 6: Substance abuse (n =422)



As per the figure-7, 5 % of the respondents were vegetarian and 93.8% took mixed diet and 1.2% took non vegetarian diet.

Figure 7: Food Habits (n =422)



Whether vegetarian or non-vegetarian 61.4%of the respondents daily skipped the morning breakfast, 15.3% skipped the lunch and 21% skipped night dinner. Two to three days in a week 34.6% skipped breakfast, 79.3 % skipped lunch and 46.9 % skipped dinner for 4 to 5 days in a week, 4 % skipped the morning breakfast, 5.4% skipped the meals and 20.3% skipped night dinner. How the respondent were accustomed of taking drinks and snacks have also been surveyed and analyzed as shown in table 5.

Table 5: Skipping of meals (n =422)

	Daily		**2 to 3 days in a week**		**4 to 5 days in a week**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Skipping morning breakfast	62	61.4	35	34.6	4	4.0	101	100.0
Skipping afternoon lunch	17	15.3	88	79.3	6	5.4	111	100.0
Skipping dinner	21	32.8	30	46.9	13	20.3	64	100.0

As per table 6 , coffee, tea, milk, soda, juice, buttermilk, biscuit, murukku, vadai, bonda, bajji,and samosa were taken once in a day by 17.6%, 8.0%, 57.7%, 63.6%, 69.4%, 60%, 58.2%, 71.1%, 72.4%, 69.1%, 61.0% and 72.9% of the respondents respectively. More than 2/3 rd of the respondents took juice, murukku, vadai, bonda, and bajji once in a day.

As per table 6, coffee, tea, milk, soda, juice, buttermilk, biscuit, murukku, vadai, bonda, bajji, and samosa were taken twice in a day by 30.6%, 33.9%, 26.9%, 27.3%, 19.4%, 23.1%, 27.0%, 20.0%, 21.1%, 27.2%, 33.9% and 25.4% respectively.

As per table 6, coffee, tea, milk, soda, juice buttermilk, biscuit, murukku, vadai, bonda, bajji and samosa were taken thrice in a day by 20.2%, 22.6%, 9.6%, 9.1%, 11.1%, 13.8%, 10.7%, 4.4%, 4.9%, 2.9%, 4.2%, and 1.7% of the respondents.

As per table 6 coffee, tea , milk, soda, juice , buttermilk, biscuit, murukku, vadai, bonda, bajji and samosa were taken more than thrice in a day by 31.6%, 35.5%, 5.8%, 0%, 0%, 3.1%, 4.1%, 4.4%, 1.6%, 7%, 8% and 0% of the respondents.

Table 6: Food habits of the respondents (n =422)

	1 time		2 times		3 times		more than 3 times		Total	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Coffee	34	17.6	59	30.6	39	20.2	61	31.6	193	100.0
Tea	25	8.0	106	33.9	71	22.6	111	35.5	313	100.0
Milk	30	57.7	14	26.9	5	9.6	3	5.8	52	100.0
Soda	7	63.6	3	27.3	1	9.1	0	.0	11	100.0
Juice	25	69.4	7	19.45	4	11.15	0	.0	36	100.0
Buttermilk	39	60.0	15	23.1	9	13.8	2	3.1	65	100.0
Biscuit	71	58.2	33	27.0	13	10.7	5	4.1	122	100.0
Muruku	64	71.1	18	20.05	4	4.45	4	4.4	90	100.0
Vadai	89	72.4	26	21.1	6	4.9	2	1.6	123	100.0
Bonda	94	69.1	37	27.25	4	2.95	1	.7	136	100.0
Bajji	72	61.0	40	33.95	5	4.25	1	.8	118	100.0
Somasa	43	72.9	15	25.4	1	1.7	0	.0	59	100.0

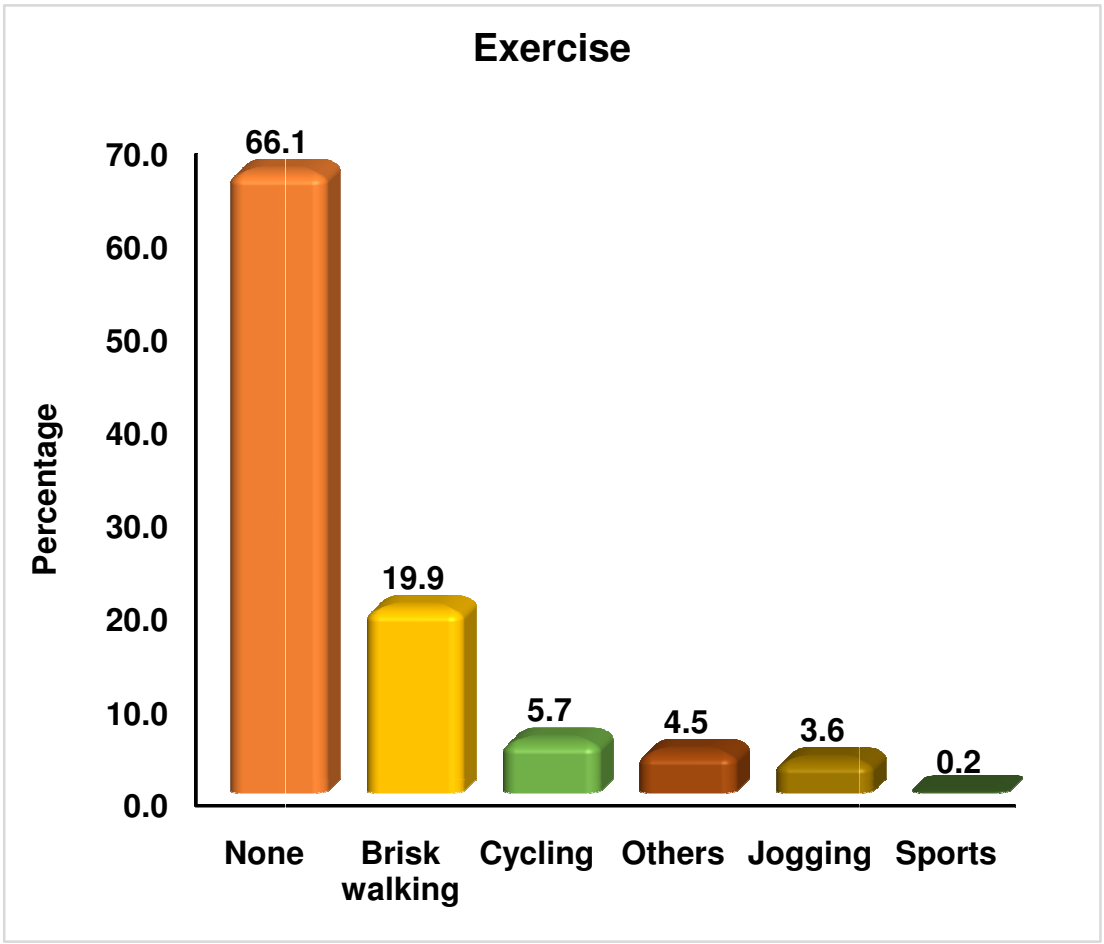
Table 7 exhibits the habit of taking non-vegetarian food, vegetables and fruits by the respondents. Of the non-vegetarian eaters, daily chicken eaters were 0.5%, fish 1.2%, 0.5% mutton, 5.5% egg, 78.2% vegetables and 26.8% fruits. 2 to 3 days in a week 11.8% took chicken, fish 14.2%, mutton 5.9%, egg 30.8%, vegetables 18.7% and fruits 33.4%. 62.9% respondents took chicken once in a week, 53.3% fish, 32%mutton, 28.7% egg, 2.4% vegetables and 25.6% fruits. Once in a month 11.8%of the respondents never take chicken, 18%fish, 48.8% mutton, 23.9% egg, 7% vegetables and 7.1% fruits.

Table 7: Food habits of the respondents (n =422)

	Never		**once a month**		**once a week**		**2 to 3 days a week**		**Daily**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Chicken	55	13.0	50	11.8	265	62.9	50	11.8	2	.5	422	100.0
Fish	76	18.0	56	13.3	225	53.3	60	14.2	5	1.2	422	100.0
Mutton	206	48.8	54	12.8	135	32.0	25	5.9	2	.5	422	100.0
Egg	101	23.9	47	11.1	121	28.7	130	30.8	23	5.5	422	100.0
Vegetables	3	.7	0	.0	10	2.4	79	18.7	330	78.2	422	100.0
Fruits	30	7.1	30	7.1	108	25.6	141	33.4	113	26.8	422	100.0

As per figure -8, 66.8%of the respondents never did exercise in a day, 19.9% did brisk walking, 3.6% did jogging, cycling 5.7%, sports 0.2%, and other exercise 4.5%.

Figure 8: Exercise (n =422)



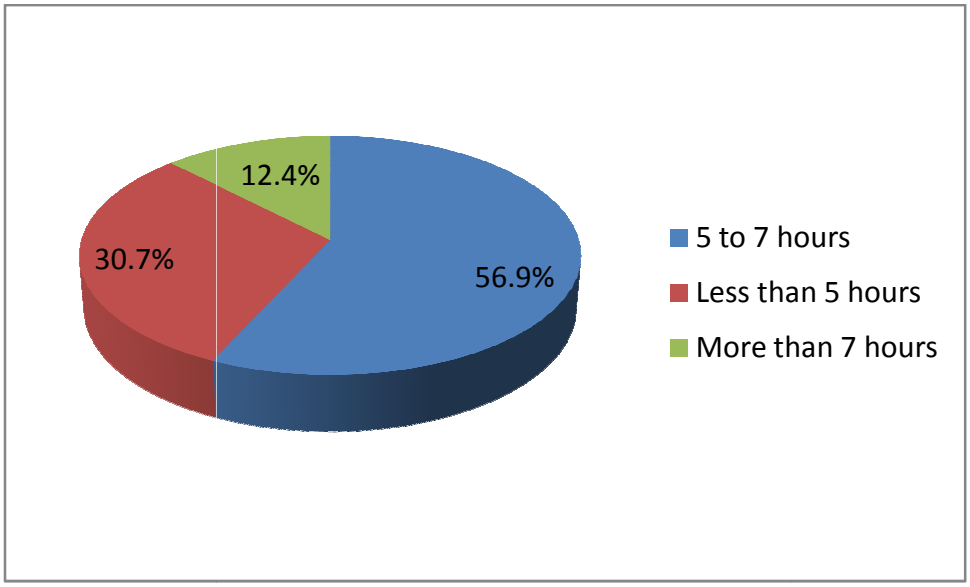
Of the respondents who do exercise (33.6% of the respondents), 12.3% do exercise once in a week, 10.3% two days in a week, 22.6% three days in a week, 6.8% four days in a week, 4.8%each on five days and six days in a week and remaining 38.4% do exercise all the seven days in a week as per table 8.

Table 8: Exercise frequency (n =146)

Exercise in days in a week	No. Of persons	Percentage
1 day	18	12.3%
2 days	15	10.3%
3 days	33	22.6%
4 days	10	6.8%
5 days	7	4.8%
6 days	7	4.8%
7 days	56	38.4%
Total	146	100.0%

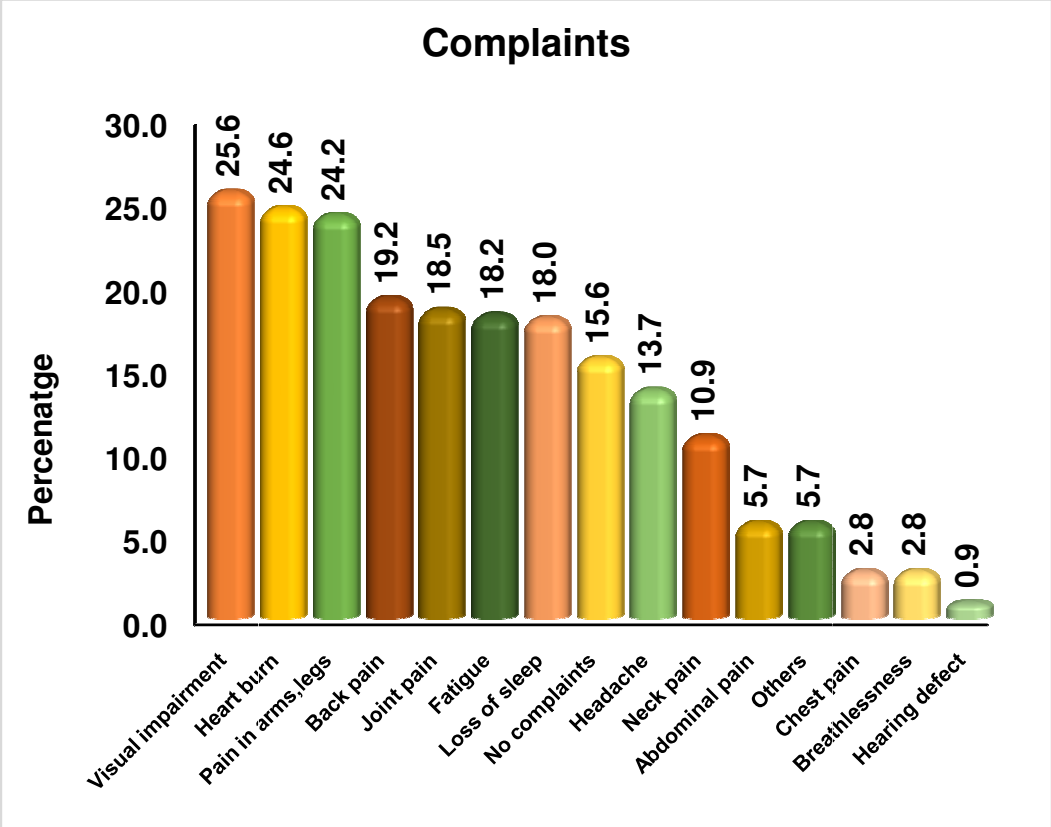
As per figure 9, 30.7%of the respondents have sleep less than 5 hrs a day, 56.9% more than5 hrs but below 7 hrs and 12.4%sleep more than7 hrs in a day.

Figure 9: Duration of sleep (n =422)



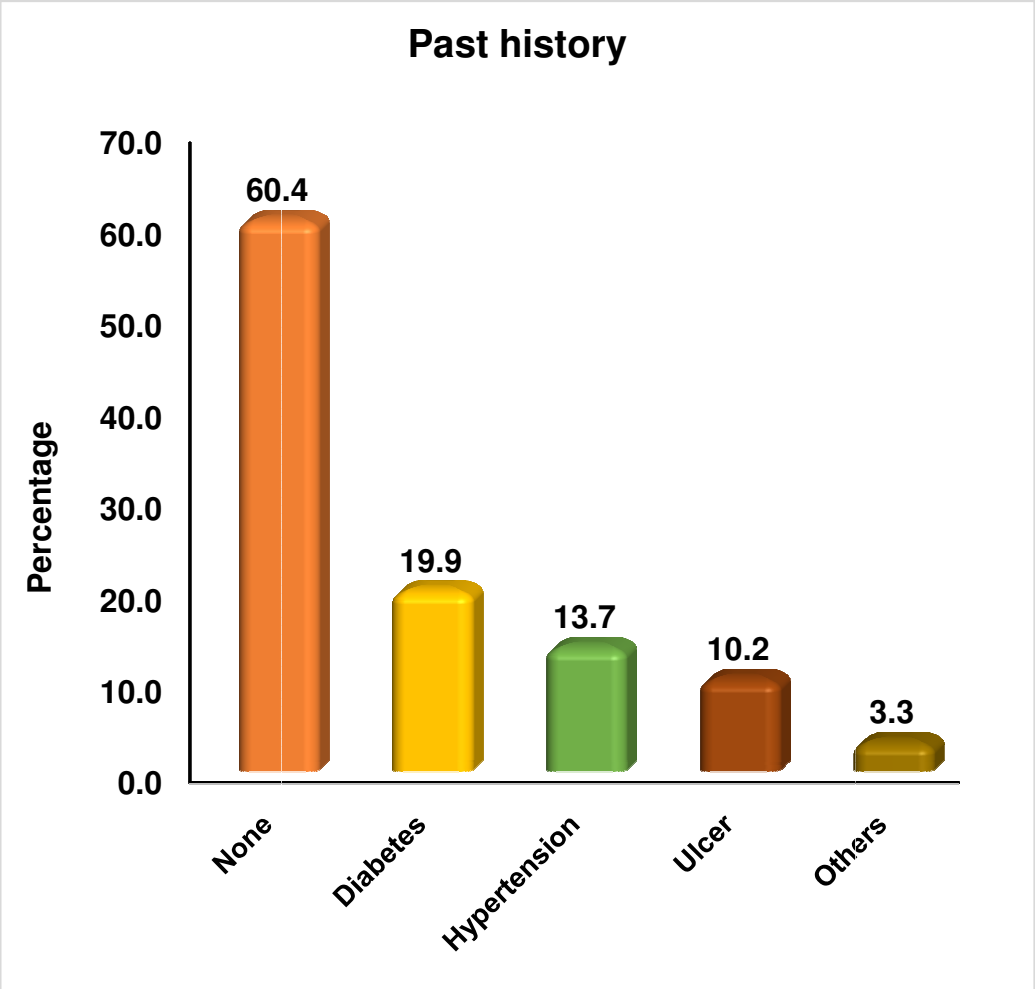
As per figure-10. The survey revealed the fact that 15.6% (69) had no complaints, 13.7% (58) headache, 2.8% (12) chest pain, 24.6%(104) heartburn, 5.7% (24) abdominal pain, 19.2% (81) back pain, 18.3% (77) joint pain, 24.2% (102) pain in arms and legs, 10.9% (46) neck pain, 18.2% (77) fatigue, 25.6% (108) visual impairment, 0.9% (4) hearing defect, 18% (76) loss of sleep, 2.8% (12) breathlessness and 5.7% (24) other complaints. The single largest group suffered from visual impairment followed by heartburn. This was also reflected in multiple responses.

Figure 10: complaints (n =422)



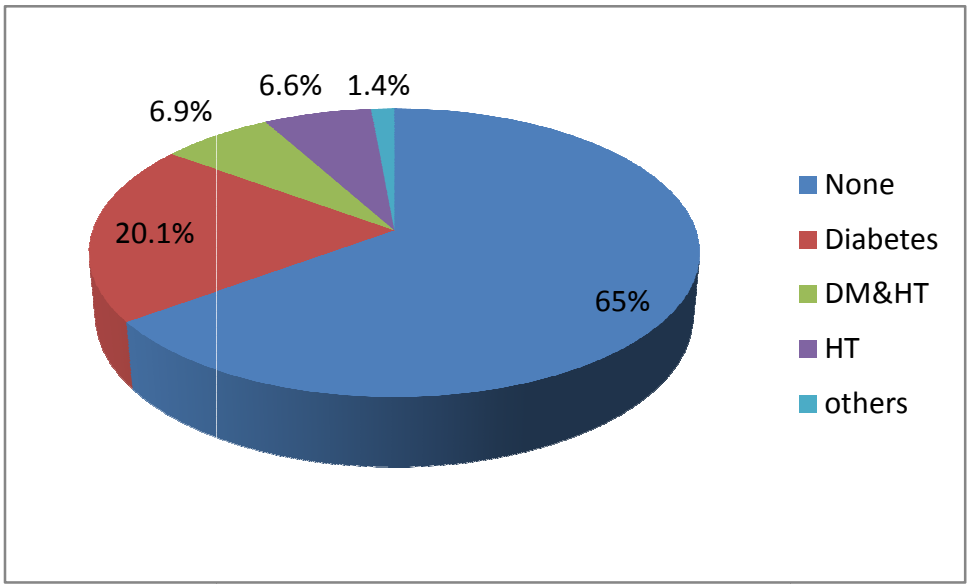
As per figure11, 60.4%of the respondents had not suffered from any chronic disease but 19.9%from diabetes, 13.7% from hypertension, 10.2% from ulcer and other diseases 3.3%.Diabetes was the disease affected the single largest group of respondents

Figure 11: Past History (n =422)



As per figure-12, 64.9% of the respondents did not have family history of diseases but 20.1% with diabetes, 6.6% with hypertension, 1.4% with others and 6.9% with DM& HT. Even under the family history diabetes stands first.

Figure 12: Family history (n =422)



Test of statistical significance

Chisquare test was applied to know the association between age and diseases and also between risk factor and diseases.

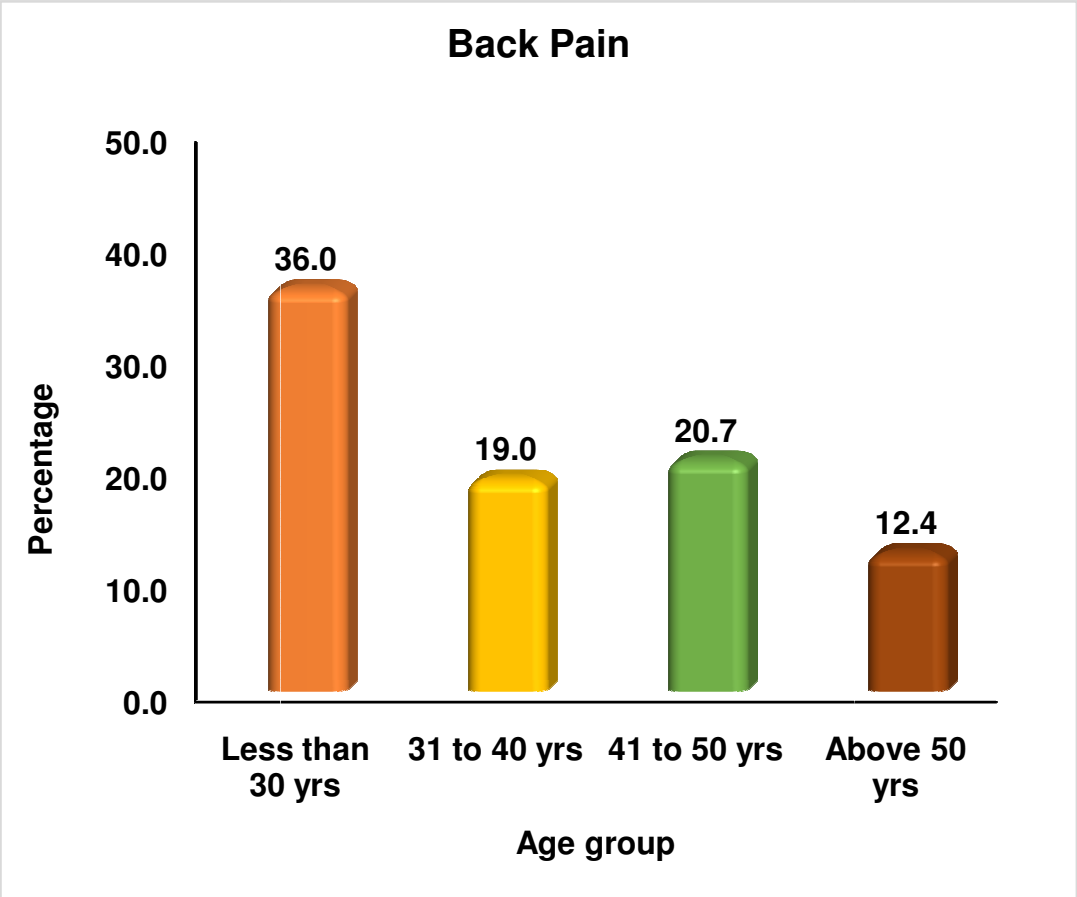
From table 8, 41% of respondents were overweight .Of the overweight 46.3% were in the age group of 41yr to 50 yr.14.5% of the respondents were found to be obese. Of the obese 18.2% were in the age group of above 50 yrs. There was found to be a statistical significance between age and obesity with a chi square value of 13.60 and a p value of less than 0.001

Table 9: Prevalence of obesity (n =422)

		Under weight		Normal		Over weight		Obese		Total	
		N	%	N	%	N	%	N	%	N	%
Age	less than 30 yrs	2	8.0	14	56.0	6	24.0	3	12.0	25	100.0
	31 to 40 yrs	6	3.8	74	46.8	67	42.4	11	6.9	158	100.0
	41 to 50 yrs	3	2.0	50	33.6	69	46.3	27	18.0	149	100.0
	Above 50 yrs	1	1.1	37	42.0	30	34.1	0	22.7	88	100.0
	Total	12	2.9	175	41.7	172	41.0	61	14.5	420	100.0

There was a significant association between age and back pain with chi square value of 4.114 and a p value of .043

Figure 13: Association between age and back pain (n =422)



There was a significant association between age and joint pain with a chisquare value 4.750 and a p value of .029

Figure 14: Association between age and joint pain

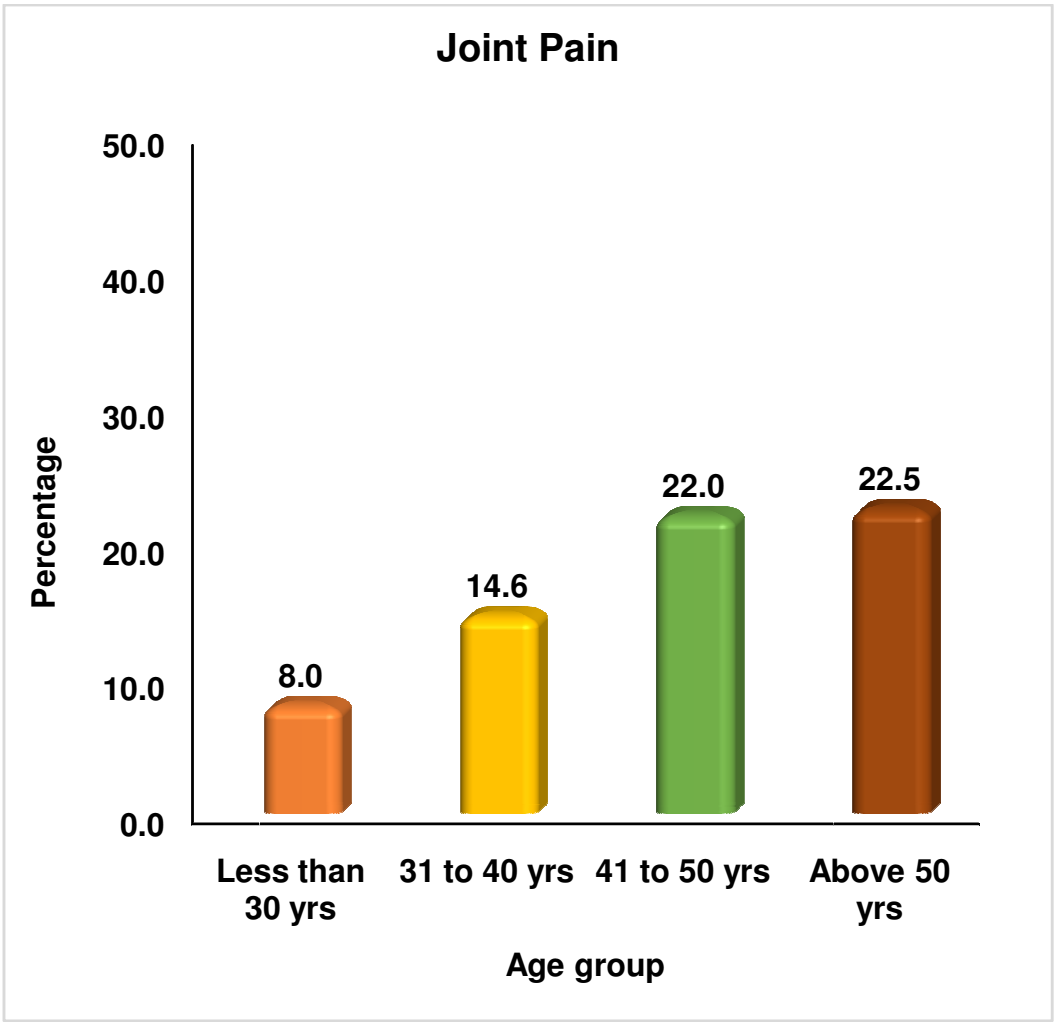
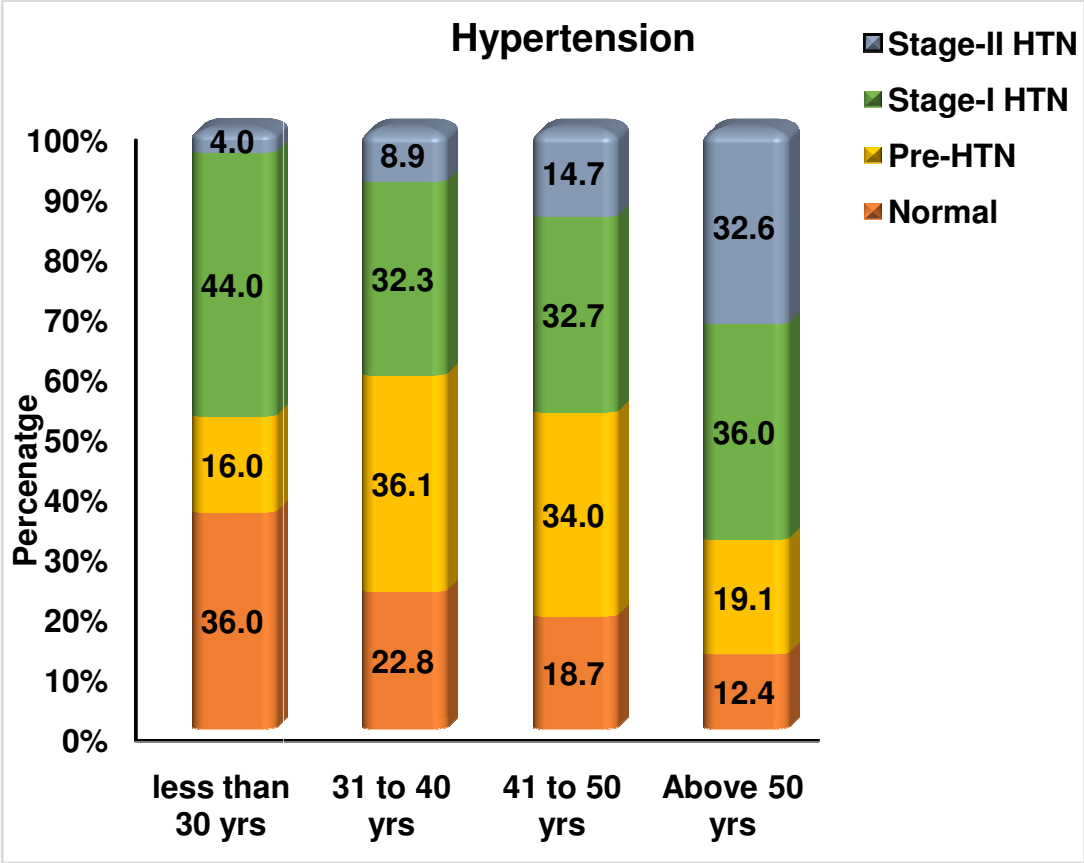


Figure 15: Association between age and hypertension (n =422)



There was a significant association between age and hypertension with a chisquare value 22.248 and p value of less than .001

Statisticallythere was no significant association between age and cardiovascular symptoms with a p value of .197

Table 10: Association between age and cardiovascular symptoms (n =422)

		Cardiovascular symptoms					
		No		**Yes**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**
Age	less than 30 yrs	25	100.0	0	.0	25	100.0
	31 to 40 yrs	154	97.5	4	2.5	158	100.0
	41 to 50 yrs	143	95.3	7	4.7	150	100.0
	Above 50 yrs	85	95.5	4	4.5	89	100.0
	Total	407	96.4	15	3.6	422	100.0

Chi-Square Tests	Value	P-Value
Chi-Square for trend	1.661	0.197

Statistically there was no significant association between age and respiratory symptoms with a p value 0.156

Table11: Association between age and respiratory symptoms (n =422)

		Respiratory symptoms					
		No		**Yes**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**
Age	less than 30 yrs	25	100.0	0	.0	25	100.0
	31 to 40 yrs	154	97.5	4	2.5	158	100.0
	41 to 50 yrs	140	93.3	10	6.7	150	100.0
	Above 50 yrs	85	95.5	4	4.5	89	100.0
	Total	404	95.7	18	4.3	422	100.0

Chi-Square Tests	Value	P-Value
Chi-Square for trend	2.008	0.156

Statistically there was no significant association between age and neck pain with a p value of 0.623

Table12: Association between age and neck pain (n =422)

		Neck Pain					
		No		Yes		Total	
		N	%	N	%	N	%
Age	less than 30 yrs	23	92.0	2	8.0	25	100.0
	31 to 40 yrs	142	89.9	16	10.1	158	100.0
	41 to 50 yrs	133	88.7	17	11.3	150	100.0
	Above 50 yrs	79	88.8	10	11.2	89	100.0
	Total	377	89.3	45	10.7	422	100.0

Chi-Square Tests	Value	P-Value
Chi-Square for trend	0.242	0.623

Statistically there was no significant association between age and pain in arms, legs with a p value of 0.373

Table13: Association between age and pain in arms, legs (n =422)

		Pain in arms, legs					
		No		**Yes**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**
Age	less than 30 yrs	18	72.0	7	28.0	25	100.0
	31 to 40 yrs	124	78.5	34	21.5	158	100.0
	41 to 50 yrs	115	76.7	35	23.3	150	100.0
	Above 50 yrs	63	70.8	26	29.2	89	100.0
	Total	320	75.8	102	24.2	422	100.0

Chi-Square Tests	Value	P-Value
Chi-Square for trend	0.794	0.373

Statistically there was no significant association between age and acid peptic disease with a p value of 0.445

Table14: Association between age and acid peptic disease (n =422)

		Acid peptic disease					
		No		Yes		Total	
		N	%	N	%	N	%
Age	less than 30 yrs	20	80.0	5	20.0	25	100.0
	31 to 40 yrs	115	72.8	43	27.2	158	100.0
	41 to 50 yrs	102	68.0	48	32.0	150	100.0
	Above 50 yrs	64	71.9	25	28.1	89	100.0
	Total	301	71.3	121	28.7	422	100.0

Chi-Square Tests	Value	P-Value
Chi-Square for trend	0.583	0.445

Statistically there was no significant association between age and anemia with a p value of .749

Table15: Association between age and anemia (n =422)

		Anemia					
		Yes		No		Total	
		N	%	N	%	N	%
Age	less than 30 yrs	2	8.0	23	92.0	25	100.0
	31 to 40 yrs	10	6.3	148	93.7	158	100.0
	41 to 50 yrs	11	7.3	139	92.7	150	100.0
	Above 50 yrs	7	7.9	82	92.1	89	100.0
	Total	30	7.1	392	92.9	422	100.0

Chi-Square Tests	Value	P-Value
Chi-Square for trend	0.103	0.749

There was a statistically significant association between age and visual defect with a p value was less than 0.001

Table16: Association between visual defect and age (n =422)(Right eye)

		Visual defect (Right)							
		<6/12		<6/18		<3/60		Total	
		N	%	N	%	N	%	N	%
Age	less than 30 yrs	23	92.0	2	8.0	0	.0	25	100.0
	31 to 40 yrs	145	91.8	9	5.7	4	2.5	158	100.0
	41 to 50 yrs	123	82.6	10	6.7	16	10.7	149	100.0
	Above 50 yrs	53	59.6	19	21.3	17	19.1	89	100.0
	Total	344	81.7	40	9.5	37	8.8	421	100.0

Chi-Square Tests	Value	P-Value
Chi-Square for trend	35.182	<0.001

Table 17: Association between age and visual defect (n =422)(Left eye)

		Visual defect (Left)							
		<6/12		<6/18		<3/60		Total	
		N	%	N	%	N	%	N	%
Age	less than 30 yrs	23	92.0	2	8.0	0	.0	25	100.0
	31 to 40 yrs	146	92.4	8	5.1	4	2.5	158	100.0
	41 to 50 yrs	123	82.0	13	8.7	14	9.3	150	100.0
	Above 50 yrs	53	59.6	21	23.6	15	16.9	89	100.0
	Total	345	81.8	44	10.4	33	7.8	422	100.0

Chi-Square Tests	Value	P-Value
Chi-Square for trend	35.066	<0.001

There was a statistically significant association between age and visual defect in both eyes with a p value of <.001

Table 18: Association between age and visual defect in both eyes

		Visual defect in both eyes					
		Yes		No		Total	
		N	%	N	%	N	%
Age	less than 30 yrs	2	8.0%	23	92.0%	25	100.0%
	31 to 40 yrs	13	8.2%	145	91.8%	158	100.0%
	41 to 50 yrs	29	19.3%	121	80.7%	150	100.0%
	Above 50 yrs	37	41.6%	52	58.4%	89	100.0%
	Total	81	19.2%	341	80.8%	422	100.0%

Chi-Square Test	Value	P-Value
Trend Chi-Square	37.663	<0.001

There was a statistically significant association between skipping of morning breakfast and acid peptic disease with a p value of 0.011

Table19: Association between acid peptic disease and skipping morning breakfast (n =422)

Skipping breakfast	**Acid peptic disease**					
	No		**Yes**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Yes	62	61.4	39	38.6	101	100.0
No	239	74.5	82	25.5	321	100.0
Total	301	71.3	121	28.7	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	6.416	0.011

Statistically there was no significant association between skipping of afternoon meals and acid peptic disease with a p value of 0.131

Table20: Association between acid peptic disease and skipping of afternoon meals (n =422)

Skipping meals	**Acid peptic disease**					
	No		**Yes**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Yes	73	65.8	38	34.2	111	100.0
No	228	73.3	83	26.7	311	100.0
Total	301	71.3	121	28.7	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	2.278	0.131

Statistically there was no significant association between skipping of night dinner and acid peptic disease with a p value of 0.273

Table21: Association between acid peptic disease and skipping night dinner (n =422)

Skipping dinner	**Acid peptic disease**					
	No		**Yes**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Yes	42	65.6	22	34.4	64	100.0
No	259	72.3	99	27.7	358	100.0
Total	301	71.3	121	28.7	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	1.199	0.273

Statistically there was no significant association between drinking coffee and acid peptic disease with a p value of 0.772

Table 22: Association between drinking coffee and acid peptic disease (n =422)

Drinking coffee	**Acid peptic disease**					
	No		**Yes**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Yes	139	72.0	54	28.0	193	100.0
No	162	70.7	67	29.3	229	100.0
Total	301	71.3	121	28.7	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	0.084	0.772

Statistically there was no significant association between drinking tea and acid peptic disease with a p value of 0.424

Table23: Association between drinking tea and acid peptic disease (n =422)

Drinking Tea	**Acid peptic disease**					
	No		**Yes**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Yes	220	70.3	93	29.7	313	100.0
No	81	74.3	28	25.7	109	100.0
Total	301	71.3	121	28.7	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	0.640	0.424

Statistically there was no significant association between alcohol usage and acid peptic disease with a p value of 0.285

Table24: Association between alcohol usage and acid peptic disease (n =422)

Alcohol usage	**Acid peptic disease**					
	No		**Yes**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Yes	132	68.8	60	31.3	192	100.0
No	169	73.5	61	26.5	230	100.0
Total	301	71.3	121	28.7	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	1.144	0.285

Statistically there was no significant association between food habits and acid peptic disease with a p value of 0.050

Table25: Association between acid peptic disease and food habits (n =422)

Food habit	**Acid peptic disease**					
	No		**Yes**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Vegetarian	19	90.5	2	9.5	21	100.0
Mixed	280	70.7	116	29.3	396	100.0
Total	299	71.7	118	28.3	417	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	3.841	0.050

Statistically there was no significant association between smoking and age with a p value of. 142

Table26: Association between smoking and age (n =422)

Smoking	Age									
	less than 30 yrs		31 to 40 yrs		41 to 50 yrs		Above 50 yrs		Total	
	N	%	N	%	N	%	N	%	N	%
No	21	84.0	129	81.6	107	71.3	67	75.3	324	76.8
Yes	4	16.0	29	18.4	43	28.7	22	24.7	98	23.2
Total	25	100.0	158	100.0	150	100.0	89	100.0	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	5.437	0.142

Statistically there was no significant association between alcohol usage and age with a p value of .340

Table 27: Association between alcohol usage and age (n =422)

Alcohol usage	Age									
	less than 30 yrs		31 to 40 yrs		41 to 50 yrs		Above 50 yrs		Total	
	N	%	N	%	N	%	N	%	N	%
Yes	12	48.0	77	48.7	70	46.7	33	37.1	192	45.5
No	13	52.0	81	51.3	80	53.3	56	62.9	230	54.5
Total	25	100.0	158	100.0	150	100.0	89	100.0	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	3.357	0.340

Statistically there was no significant association between tobacco use and age with a p value of 0.373

Table 28: Association between tobacco use and age (n =422)

Tobacco use	Age									
	less than 30 yrs		31 to 40 yrs		41 to 50 yrs		Above 50 yrs		Total	
	N	%	N	%	N	%	N	%	N	%
No	18	72.0	111	70.3	92	61.3	59	66.3	280	66.4
Yes	7	28.0	47	29.7	58	38.7	30	33.7	142	33.6
Total	25	100.0	158	100.0	150	100.0	89	100.0	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	3.127	0.373

Statistically there was no significant association between physical exercise and age with a p value of .080

Table 29: Association between physical exercise and age (n =422)

Physical exercise	Age									
	less than 30 yrs		31 to 40 yrs		41 to 50 yrs		Above 50 yrs		Total	
	N	%	N	%	N	%	N	%	N	%
No	16	64.0	114	72.2	102	68.0	50	56.2	282	66.8
Yes	9	36.0	44	27.8	48	32.0	39	43.8	140	33.2
Total	25	100.0	158	100.0	150	100.0	89	100.0	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	6.755	0.080

Statistically there was no significant association between sleep and age with a p value of .070

Table 30: Association between sleep and age (n =422)

Sleeping Hours	Age									
	less than 30 yrs		31 to 40 yrs		41 to 50 yrs		Above 50 yrs		Total	
	N	%	N	%	N	%	N	%	N	%
< 5 hours	9	36.0	58	37.2	46	30.7	16	18.0	129	30.7
5 to 7 hours	12	48.0	82	52.6	83	55.3	62	69.7	239	56.9
> 7 hours	4	16.0	16	10.3	21	14.0	11	12.4	52	12.4
Total	25	100.0	156	100.0	150	100.0	89	100.0	420	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	11.678	0.070

Statistically there was no significant association between oily snacks intake and acid peptic disease with a p value of 0.998

Table 31: Association between oily snacks intake and acid peptic disease (n =422)

		Acid peptic disease					
		No		Yes		Total	
		N	%	N	%	N	%
Intake of Oily Snacks	Yes	194	71.3%	78	28.7%	272	100.0%
	No	107	71.3%	43	28.7%	150	100.0%
	Total	301	71.3%	121	28.7%	422	100.0%

Chi-Square Test	Value	P-Value
Pearson Chi-Square	0.000	0.998

Statistically there was no significant association between chicken intake and acid peptic disease with a p value of 0.941

Table 32: Association between chicken intake and acid peptic disease (n =422)

Chicken intake	Acid peptic disease					
	No		Yes		Total	
	N	%	N	%	N	%
No	39	13.0	16	13.2	55	13.0
Yes	262	87.0	105	86.8	367	87.0
Total	301	100.0	121	100.0	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	0.005	0.941

Statistically there was no significant association between fish intake and acid peptic disease with a p value of 0.180

Table33: Association between fish intake and acid peptic disease (n =422)

Fish intake	Acid peptic disease					
	No		Yes		Total	
	N	%	N	%	N	%
No	59	19.6	17	14.0	76	18.0
Yes	242	80.4	104	86.0	346	82.0
Total	301	100.0	121	100.0	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	1.801	0.180

Statistically there was no significant association between red meat intake and acid peptic disease with a p value of 0.381

Table 34: Association between red meat intake and acid peptic disease (n =422)

Red meat intake	Acid peptic disease					
	No		Yes		Total	
	N	%	N	%	N	%
No	151	50.2	55	45.5	206	48.8
Yes	150	49.8	66	54.5	216	51.2
Total	301	100.0	121	100.0	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	0.767	0.381

Statistically there was no significant association between skipping morning breakfast and anemia with a p value of 0.090

Table 35: Association between skipping morning breakfast and anemia (n =422)

Skipping breakfast	**Anemia**					
	Yes		**No**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Yes	11	36.7	90	23.0	101	23.9
No	19	63.3	302	77.0	321	76.1
Total	30	100.0	392	100.0	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	2.876	0.090

Statistically there was no significant association between skipping afternoon meals and anemia with a p value of 0.416

Table 36: Association between skipping afternoon meals and anemia (n =422)

Skipping meals	Anemia					
	Yes		no		Total	
	N	%	N	%	N	%
Yes	6	20.0	105	26.8	111	26.3
No	24	80.0	287	73.2	311	73.7
Total	30	100.0	392	100.0	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	0.662	0.416

Statistically there was no significant association between skipping night dinner and anemia with a p value of 0.178

Table 37: Association between skipping night dinner and anemia (n =422)

Skipping dinner	**Anemia**					
	Yes		**no**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Yes	2	6.7	62	15.8	64	15.2
No	28	93.3	330	84.2	358	84.8
Total	30	100.0	392	100.0	422	100.0

Chi-Square Tests	Value	P-Value
Pearson Chi-Square	1.813	0.178

Statistically there was no significant association between oily snacks intake and obesity with a p value of 0.631

Table 38: Association between oily snacks intake and obesity (n =422)

		Obesity (BMI>25.0)					
		No		**Yes**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**
Intake of Oily Snacks	Yes	123	45.4%	148	54.6%	271	100.0%
	No	64	43.0%	85	57.0%	149	100.0%
	Total	187	44.5%	233	55.5%	420	100.0%

Chi-Square Test	Value	P-Value
Pearson Chi-Square	0.231	0.631

Table39: Association between hypertension and risk factors (n =422)

Risk factors		Hypertension					
		No		Yes		Total	
		N	%	N	%	N	%
Age	less than 30 yrs	13	52.0	12	48.0	25	100.0
	31 to 40 yrs	93	58.9	65	41.1	158	100.0
	41 to 50 yrs	79	52.7	71	47.3	150	100.0
	Above 50 yrs	28	31.5	61	68.5	89	100.0
Family history	None	143	52.2	131	47.8	274	100.0
	DM	47	55.3	38	44.7	85	100.0
	HTN	9	32.1	19	67.9	28	100.0
	DM+HTN	13	44.8	16	55.2	29	100.0
	Others	1	16.7	5	83.3	6	100.0
Obesity	No	106	56.7	81	43.3	187	100.0
	Yes	105	45.1	128	54.9	233	100.0
physical exercise	No	70	50.0	70	50.0	140	100.0
	Yes	143	50.7	139	49.3	282	100.0
Tobacco use	No	150	53.6	130	46.4	280	100.0
	Yes	63	44.4	79	55.6	142	100.0
Snacks intake	No	77	51.3	73	48.7	150	100.0
	Yes	136	50.0	136	50.0	272	100.0
taking vegetables & fruits	No	200	51.3	190	48.7	390	100.0
	Yes	13	40.6	19	59.4	32	100.0
Alcohol usage	Yes	91	47.4	101	52.6	192	100.0
	No	122	53.0	108	47.0	230	100.0
	Total	213	50.5	209	49.5	422	100.0

	Chi-Square Tests	
	Value	**P-Value**
Age	17.628	0.001
Family history	7.781	0.099
Obesity	5.603	0.018
Physical exercise	0.019	0.891
Tobacco use	3.194	0.074
Snacks intake	0.069	0.793
Taking vegetables & fruits	1.344	0.246
Alcohol usage	1.335	0.248

From above table it is found that as age increases the prevalence of hypertension also increases. This trend is statistically significant .This infers that there is an association between age and the prevalence of hypertension (p=.001).

The prevalence of hypertension is high (67.9%) in obese individuals than the normal individuals (32.1%).This proportion is statistically significant (p=0.018).This infers that obese people have more risk for hypertension.

Table40: Unadjusted Logistic Regression for hypertension (n =422)

Factors		Odds ratios	95% CI for OR		P-Value
			LL	UL	
Age	less than 30 yrs	1.000			
	31 to 40 yrs	0.757	0.325	1.765	0.519
	41 to 50 yrs	0.974	0.417	2.272	0.951
	Above 50 yrs	2.360	0.956	5.824	0.062
Family history	None	1.000			
	DM	0.883	0.541	1.439	0.617
	HTN	2.304	1.007	5.273	0.048
	DM+HTN	1.344	0.623	2.900	0.452
	Others	5.458	0.629	47.331	0.124
Obesity	No	1.000			
	Yes	1.595	1.083	2.351	0.018
Tobacco use	No	1.000			
	Yes	1.447	0.964	2.171	0.074

The logistic regression results show that those who had the family history of hypertension had 2.3 times higher risk with a 95% confidence interval between 1.007 to 5.273 for developing hypertension when compared to those who did not have family history of hypertension. This risk is statistically significant (p=0.048)

The obese people have 1.6 times higher risk with 95% confidence interval between 1.083 and 2.351 for developing hypertension when compared to normal people.

Table41: Multiple Logistic Regression for hypertension (n =422)

Factors		Adjusted Odds ratios	95% CI for OR		P-Value
			LL	UL	
Age	less than 30 yrs	1.000			
	31 to 40 yrs	0.785	0.325	1.895	0.590
	41 to 50 yrs	0.892	0.367	2.168	0.801
	Above 50 yrs	2.509	0.975	6.451	0.056
Family history	None	1.000			
	DM	0.897	0.539	1.495	0.678
	HTN	2.760	1.169	6.513	0.021
	DM+HTN	1.501	0.662	3.402	0.330
	Others	4.900	0.543	44.176	0.157
Obesity	No	1.000			
	Yes	1.617	1.073	2.439	0.022
Tobacco use	No	1.000			
	Yes	1.542	1.004	2.367	0.048

The logistic regression results show that those who had family history of hypertension had 2.76 times higher risk with a 95 % confidence interval between 1.169 to6.513 for developing hypertension compared to those who did not have family history of hypertension(p=.021) after adjusting for age ,obesity and tobacco use.

The obese people have1.61 times higher risk with 95% confidence interval between1.073 and 2.439 for having hypertension when compared to normal people(p=.022) after adjusting for age, family history and tobacco use

Those people who use tobacco had 1.54 times the higher risk with 95% confidence interval between 1.004 to 2.367 for having hypertension compared to those who do not use tobacco(p=0.048)

Table42: Association between Diabetes Mellitus and risk factors (n =422)

Risk factors		Diabetes Mellitus					
		No		Yes		Total	
		N	%	N	%	N	%
Age	less than 30 yrs	24	96.0	1	4.0	25	100.0
	31 to 40 yrs	137	86.7	21	13.3	158	100.0
	41 to 50 yrs	115	76.7	35	23.3	150	100.0
	Above 50 yrs	62	69.7	27	30.3	89	100.0
Obesity	No	156	83.4	31	16.6	187	100.0
	Yes	182	78.1	51	21.9	233	100.0
Hypertension	No	177	83.1	36	16.9	213	100.0
	Yes	161	77.0	48	23.0	209	100.0
Physical exercise	No	101	72.1	39	27.9	140	100.0
	Yes	237	84.0	45	16.0	282	100.0
Family history	None	233	85.0	41	15.0	274	100.0
	DM	58	68.2	27	31.8	85	100.0
	HT	24	85.7	4	14.3	28	100.0
	DM+HT	17	58.6	12	41.4	29	100.0
	Others	6	100.0	0	0.0	6	100.0
	Total	338	80.1	84	19.9	422	100.0

	Chi-Square Tests	
	Value	**P-Value**
Age	15.483	0.001
Obesity	1.862	0.172
Hypertension	2.434	0.119
Physical exercise	8.309	0.004
Family history	22.129	<0.001

From the above table it is found that as the age increases prevalence of diabetes also increases. This trend is statistically significant. This infers that there is an association between age group and prevalence of diabetes mellitus (p=.001).

There is a statistically significant association between physical exercise and diabetes (p=.004).there is also an statistically significant association between family history and diabetes with a p value of <.001.

Discussion

7. DISCUSSION

The study was done to find out the prevalence of various morbidities among the bus drivers of Metropolitan Transport Corporation Limited Chennai and to study the associated health risk factors in the profession of bus driving. In the present study the mean age of the respondents was 42.32 years, 85.3% of the respondents were not tobacco users, 76.8% were not smokers,54.5% have not used alcohol 56.2 have not suffered from any chronic disease in the past. However 41.1% were with overweight, 61.4% skipped the morning breakfast, 66.8% never did any exercise, 18.5% suffered from diabetes, 12.8% had hypertension and 9.2% had acid peptic disease.

The survey revealed the fact that 15.6%had no complaints, 13.7% had headache, 2.8% had chest pain, 24.6% had heart burn, 5.7% had abdominal pain, 19.2% had back pain, 18.3% had joint pain, 24.2% had pain in arms and legs, 10.9% had neck pain, 18.2% had fatigue, 25.6% had visual impairment, 0.9% had hearing defect, 18% had loss of sleep, 2.8% had breathlessness and 5.7% had other complaints.

According to the study of IRT Perundurai medical college and hospital in September 2012, 51.09 % of bus drivers had refractive error, 40.9% of the drivers were with diabetes, 21.92% with hypertension, 17.1% with hyperlipidemia and 25.7 % with ischemic heart disease[39]. In the present study also the single largest group suffered from visual impairment.

The study of Nazani izadi et al in Theran in 2010 and 2011 of the bus and truck drivers 16.4% were with hypertension, 9% were with diabetes, 44.8% with overweight, 20.8% were with obesity[6].

In a study conducted by Hamid R Saberi and others in Iran in 2011, 41% were with overweight and 23% were found to be with obesity[16].

In a study conducted by Iraj Mohebbi and others in Iranian professional drivers in 2012, overweight was found to be 41.4% cases, obesity was found to be 1.3%[35]

In the present study among the respondents those with overweight was found to be 41% and those with obesity was found to be 14.5% which were similar to the above studies.

In the present study among the respondents with obesity 43.3% were not hypertensive and remaining 54.9% were with hypertension. The prevalence of excessive weight and obesity in those with high blood pressure was 65.6% in the study of Nazanin Izadi, it was 68% in Poland 72% in Sweden and 77% in Greece[6]. Over weight and obesity was a risk for hypertension and cardiovascular diseases. The prevalence of hypertension was known to increase with age in the present study which was similar with other studies also.

Obesity may also be a risk factor for diabetes. In the present study Obesity with diabetes was 21.9%. The study of Hamid R Saberi showed that 41% and 23% of drivers were in the overweight and obese category.

Lack of awareness concerning the consequences was determined responsible for higher prevalence of obesity and overweight among drivers as per the same study[16].

Skipping of regular morning breakfast was found to be a risk factor for acid peptic disease. There was an association between skipping of regular morning breakfast and acid peptic disease. This association has not been studied and proved with the available literature.

Low back ache percentage among the respondents in this study was 19% where as Jadhavs study in Maharastra in 2012 the said percentage was 64% .This low percentage of low backache in this study may be due to the average age of drivers. Age as the factor for low backache has been proved that there is an association between age and low backache.[37]

Summary

8. SUMMARY AND CONCLUSION

The job of bus driving was considered risky due to several health related risk factors associated with the driving profession. A cross sectional study among the bus drivers was conducted with the objective of studying the various health related morbidities prevailing among the bus drivers and also to study the associated health related risk factors.

A review of earlier literature substantiated the fact that the health related risk factors may result in chronic diseases. To overcome chronic diseases the health related risk factors may be avoided substantially in the larger interest of public safety This cross sectional study was done by selecting 422 bus drivers on random basis by using multistage random sampling.

The required information was obtained by means of questionnaire and also by means of measurement of physical parameters and clinical examination. Information so collected were analysed, interpreted and discussed.

The analysis revealed the fact that the mean age of bus drivers was 42.32 years, 85.3% of the respondents were not tobacco users, 76.8% were not smokers,54.5% have not used alcohol 56.2 have not suffered from any chronic disease in the past.

However 41.1% were with overweight, 61.4% skipped the morning breakfast , 66.8% never did any exercise, 18.5% suffered from a past history of diabetes, 12.8% suffered from a past history of hypertension and 9.2% had a past history of acid peptic disease.

The survey revealed the fact that 15.6% had no complaints, 13.7% had headache, 2.8% had chest pain, 24.6% had heart burn, 5.7% had abdominal pain, 19.2% had back pain, 18.3% had joint pain, 24.2% had pain in arms and legs, 10.9% had neck pain, 18.2% had fatigue, 25.6% had visual impairment, 0.9% had hearing defect, 18% had loss of sleep, 2.8% had breathlessness and 5.7% had other complaints. The association between age and other diseases was examined by using chi square test. The association between health risk factors and chronic diseases were also examined by using chi square test.

There was a significant association between age and obesity, age and back pain, age and joint pain, age and hypertension, age and visual defect. There was found to be a statistical significance between skipping of morning breakfast and acid peptic disease.

There was also a statistical association between family history and hypertension, obesity and hypertension, tobacco use and hypertension. There was also

a statistical association between age and diabetes mellitus, no physical exercise and diabetes mellitus, family history and diabetes mellitus.

Overweight and obesity was found to be a risk factor for hypertension and diabetes. The study was of the view that the bus driving was associated with health risk factors. There was also vast scope to avoid health risk factors by routine exercise, having regular diet and rest.

Recommendations

9. RECOMMENDATIONS

- The analysis and interpretation of the primary data collected revealed the fact that there are health risk factors associated with driving in general and bus driving in particular.

- The health risk factors are possibility for hypertension , diabetes mellitus, cardiovascular diseases, obesity, visual impairment, declining professional efficiency on account of diabetes mellitus, backache etc

- Though hypertension, diabetes mellitus, backache, cardiovascular disease, visual impairment, hearing impairment etc may not be to bus drivers alone but the causes for these health risk factors are associated with the profession.

- The profession of bus driving for a significantly long period results in the formation of adipose tissue in the abdomen. Frequent jolting while they are on the wheel results in forward bend as a result of which back pain occurs.

- High body mass index due to unscheduled diet, sedentary work and tension in the profession results in hypertension, high level concentration on the road in different light conditions results in visual impairment, noise pollution while driving results in hearing impairment etc.

- Therefore it is right to recommend measures medically and by counselling to reduce the causes for the various ailments, preferably chronic ailments. In bus driving, among other things, obesity is considered to be a risk factor for several diseases like hypertension, diabetes mellitus, cardiovascular disease etc.

- Weight reduction is considered to be an important preventive and control measure for chronic diseases and also enhances the professional efficiency of the bus drivers.

- Regular walking of 30 minutes per day is recommended for healthy well being and for preventing various health related risk factors.

- From the very day of recruitment the need for avoiding the formation of obesity and increasing body mass index is to be explained to the employees and periodically that is at the maximum once in six months the drivers shall be examined medically and told them their body mass index and obesity.

- A medical record note may be given to each and every bus driver and the medical indices are to be recorded and to be given to them .With the help of experts of yoga, meditation, physical educationist , gymnasium experts etc .the drivers may be given counselling as to how to maintain the body mass index.

- Type II diabetes is increasing more rapidly, a trend which is claimed to be caused by the increased rate of obesity, sedentary lifestyle and ageing population. Fortunately however this rampant disease can be prevented and managed through lifestyle modifications and medication therapy.

- Long hours of work are associated with higher body mass index. Poorer dietary habits and reduced leisure time physical activity may lead to obesity often among men. As such the working hours should not be longer, dietary habits should not be poorer and leisure time physical activity shall be enhanced.

- More leisure time exercise and shortening the length of work hours are among the most important ways to improve their health and work environment to overcome the health risk factors associated with occupational disease.

- The risk factors may be avoided by maintaining a regular physical activity, focussing on dynamic exercise, having medical checkups, especially checking BP, ECG, blood cholesterol ,triglyceride and glucose levels and having a chest x ray periodically.

- Besides a strive to get adequate sleep by avoiding the use of stimulants, avoiding excessive use of coffee and avoiding late night driving .

- The habit of alcohol intake and smoking to reduce physical and mental stress by drivers to be avoided.

- On the side of food habits, the drivers may be advised to take a healthy and well balanced diet regularly. They must be sure of taking breakfast, sure of avoiding heavy meals before going to sleep and have to check their weight as a preventive measure.

- The drivers may be advised to take short breaks with stretch exercise in order to avoid fatigue. To prevent physical strain of bus drivers, buses may be equipped with proper seating and suspension system.

- The lifestyle of bus drivers may be changed by inculcating an educational program to know the importance of preventive measures to have a better health.

- Further research is needed to explore the linkages between health promotion efforts for individual workers and efforts to improve the organisational physical and social environments at work. Strengthening these linkages could serve to maximize the impact of change within a multi-level program.

Limitations

10. LIMITATIONS

1. The data collection was restricted to one geographical area in Chennai city of Tamilnadu in India in view of operational constraints.

2. The study was confined to drivers of Metropolitan Transport Corporation Limited Chennai.

3. The study does not allow the determination of causal association since we used a cross-sectional study.

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Annexures

ANNEXURE 1

INFORMATION SHEET

Title of the Dissertation:

"A morbidity study of health related risk factors of bus drivers of Metropolitan Transport Corporation Limited, Chennai. 2014"

The nature of bus driving is subject to health risk factors which may deteriorate the health status of drivers which requires immediate care and cure. Having health examination regularly will prevent deterioration of health status and may create awareness to adopt preventive and curative measures regarding their health status.

This study is an attempt to identify the morbidities of the bus drivers of Metropolitan Transport Corporation by conducting health examination.
We request, you participate in this study.

The privacy of the patients in the research will be maintained throughout the study. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared.

Taking part in this study is voluntary. You are free to decide whether to participate in this study or to withdraw at any time; your decision will not result in any loss of benefits to which you are otherwise entitled.

The results of the special study may be intimated to you at the end of the study period or during the study if anything is found abnormal which may aid in the management or treatment.

INFORMED CONSENT FORM

Title of the Dissertation:

A morbidity study of health related risk factors of bus drivers of Metropolitan Transport Corporation Limited, Chennai. 2014

Name of the participant: Participant ID:

Age:

(1) I have been explained in detail about the study and its procedure. I confirm that I had completely understood the study and have had the opportunity to ask questions.

(2) I understand that my participation in the study is voluntary and that I am free to withdraw at any time. Without giving any reason, without my medical care or legal rights being affected.

(3) I understand that the principal investigator, others working on the investigator's behalf, the Ethics Committee and the regulatory authorities will not need my permission to look at my health records both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw from the trial. I agree to this access. However I understand that my identity will not be revealed in any information released to third parties or published.

(4) I agree not to restrict the use of any data or results that arise from the study provided such a use is only for scientific purpose(s).

(5) I agree to take part in the above study.

Signature of investigator Signature of participant

_____ _____

தகவல் அறிக்கை

ஆய்வு தலைப்பு:

சென்னை பெருநகர போக்குவரத்து கழகம் (வரையறுக்கப்பட்டது) பேருந்து ஓட்டுநர்களின் சுகாதார இன்னல்களின் காரணிகள் மீது ஓர் ஆய்வு, சென்னை - 600 014.

பேருந்து ஓட்டும் பணியின் இயல்பானது ஆரோக்கியம் இன்னல் காரணிகளுக்கு உட்படுவதால் (ஓட்டுநர்களின் சுகாதார நிலைமையை குறைக்கும் என்பதால்) அதற்கு உடனடி கவனிப்பு மற்றும் குறை நீக்கலும் தேவை. தொடர்ந்து ஆரோக்கியத்தை சோதித்து கொள்வதன் மூலம் ஆரோக்கியம் குறைந்து வருவதை தடுப்பதற்கும், நோய் தடுப்பு நடவடிக்கைகளை மேற்கொள்வதற்கும் ஆரோக்கிய நிலையைப் பற்றி விழிப்புணர்விற்கும் உதவும்.

பெருநகர பேருந்து ஓட்டுநர்களின் ஆரோக்கியத்தை பரிசோதனை மூலம் அவர்களுக்கு இருக்கும் நோய்களை கண்டறிய ஒரு முயற்சியே இந்த ஆய்வு.

தாங்கள் இந்த ஆய்வில் கலந்து கொள்ளும்படி வேண்டுகிறோம். இந்த ஆய்வில் பங்கேற்பவரின் ரகசியங்கள் இந்த ஆய்வு முழுவதும் பாதுகாக்கப்படும். இந்த ஆய்வு கட்டுரை வெளியிடப்படும் நிலையில் இந்த ஆய்வின் முடிவானது யாதொரு தனி மனிதரின் அடையாளம் காட்டும் தகவல்கள் வெளியிடப்படமாட்டாது.

இந்த ஆய்வில் பங்கு கெர்ளவது தன்னிச்சையானது. தாங்களாகவே இந்த ஆய்வில் பங்கு கொள்வது அல்லது பங்கு கொள்ளாமல் இருப்பது பற்றி முடிவெடுத்துக் கொள்வதோடு ஏந்த நேரத்திலும் விலகிக் கொள்ள அனுமதியும் அளிக்கப்படுகிறது.

இந்த சிறப்பு ஆய்வின் முடிவுகள் தங்களுக்கு ஆய்வு முடிந்தபிறகு தெரிவிக்கப்படும். இந்த ஆய்வின் போது ஏதாவது அசாதாரணமாக தெரிந்தால் சிகிச்சை அளிக்க உதவப்படும்.

ஆய்வாளரின் கையொப்பம் பங்கு கொள்பவரின் கையொப்பம்

_____ _____

தேதி : தேதி :

ஒப்புதல் படிவம்

ஆய்வு தலைப்பு

சென்னை பெருநகர போக்குவரத்து கழகம் (வரையறுக்கப்பட்டது) பேருந்து ஓட்டுநர்களின் சுகாதார இன்னல்களின் காரணிகள் மீது ஓர் ஆய்வு, சென்னை-14.

பங்கு கொள்பவரின் பெயர் : வயது :

பங்கு கொள்பவரின் அடையாளம் :

1, எனக்கு இந்த ஆய்வை பற்றியும் கையாளும் முறைப்பற்றியும் விளக்கப்பட்டது. இந்த ஆய்வை பற்றி முற்றிலும் புரிந்து கொள்ள எனக்கு கேள்விகள் கேட்க வாய்ப்பும் அளிக்கப்பட்டது.

2, இந்த ஆய்வில் நான் பங்கு கொள்வதும், சுயமாக எந்த நேரத்திலும் இதில் இருந்து விலகிக் கொள்ளலாம் என்பதனை புரிந்து கொண்டேன்

3, முதன்மை ஆய்வாளரோ, ஆய்வாளரின் சார்பாக பணிபுரியும் மற்றவர்களோ, நீதி குழு மற்றும் ஒழுங்காற்றும் அதிகாரிகளோ என்னுடைய ஆரோக்கியம் பற்றிய இதன் தொடர்பாக ஆவணங்களை பார்வையிட அனுமதி அளிக்கிறேன். இந்த ஆய்விற்க்கோ அல்லது வருங்கால ஆராய்ச்சிக்கு என்னுடைய அனுமதியை கோர வேண்டியது இல்லை என்று புரிந்து கொண்டேன். நான் இதில் ஈடுபடுத்திக் கொள்ள இணங்குகிறேன். இருப்பினும் என்னுடைய அடையாளத்தை கொண்டு எந்த தகவல்களையும் மூன்றாம் நபருக்கு தெரிவிக்கப்படமாட்டாது என அறிகிறேன்.

4, இந்த ஆய்வின் மூலம் கிடைக்கும் எந்த புள்ளி விபரத்தையும் அல்லது முடிவினையும் அறிவியலுக்கும் பயன்படுவதற்கு நான் தடுக்கமாட்டேன் என்பதனையும் ஏற்றுக் கொள்கிறேன்.

5, நான் ஆய்வில் பங்கு கொள்ள சம்மதிக்கிறேன்.

ஆய்வாளரின் கையொப்பம் பங்கு கொள்பவரின் கையொப்பம்

_____ _____

தேதி : தேதி

ANNEXURE 2

A STUDY ON HEALTH RELATED RISK FACTORS OF BUS DRIVERS OF METROPOLITAN TRANSPORT CORPORATION LIMITED. CHENNAI ,2014

SL.No: Date:

Name:

Office Address:

A. <u>Socio-Demographic particulars</u>:

A.1. Age in years:

1) Less than 30 2) 31 to 40 3) 41 to 50 4) over 50

A.2. Educational qualification:

1) Upto 10th standard 2) plus two 3) diploma 4) degree

A.3. Total years of experience as drivers

1) Less than 10 2) 11 to 20 3) 21 to 30 4) above 30

A.4. Type of service:

1) Green board 2) White board 3)Yellow board 4)Red

2) board 5) Digital 6) AC bus

<u>B. Life style factor</u>:

B.1. Smoking:

a) Do you currently smoke?

1) Yes daily 2) yes, once a week 3) No

b) If yes, what do you smoke?

1) Cigarette 2) Bidi 3) Others (specify) _____

c) How many sticks do you smoke on an average in a day_____ in a month _____

d) When did you start smoking at first?_____(age)

B.2. Consumption of smokeless tobacco:

a) Do you currently take betel leaf (pan)?

1) Yes daily 2) Yes once a week 3) No

b) Do you take any chewable tobacco with betel leaf?

1) Yes 2) No

c) If yes, for how long are you taking chewable tobacco? _____

d) How many times do you take these in a day? _____

B.3. Consumption of alcohol:

a) Do you drink alcohol?

1) Yes 2) No

b) If yes what type of alcohol?

1) Brandy 2) whisky 3)Beer 4) others (specify) ____

c) For how long you have been drinking? _____months _____years

d) For how many days in a week do you usually drink? _____

e) How much alcohol do you consume usually at a time?
_____ Pegs (60ml -brandy, whisky, others) _____quarter (180ml)
_____half (360ml) _____bottles (650ml- beer)

B.4. Food habits:

a) Are you a

1) Vegetarian 2) non vegetarian 3)Mixed

b) How often you have to miss the following meals?

	1) Daily	2) 2 to 3 days in a week	3) 4 to 5 days in a week
Breakfast			
Lunch			
Evening meal			

c) Apart from main meals how many times on an average in a day do you take the following?

	1)One time	2)Two times	3)Three times	4)More than 3 times
Coffee				
Tea				
Milk				
Soda				
Fruit juice				
Butter milk				
Biscuits				
Murrukku				
Vada				
Bonda/Baji				
Somosa				

d) How often you used to eat the following food items?

	1)Never	2)Once a month	3)Once a week	4)2- 3 days a week	5)Daily
Chicken					
Fish					
Red meat					
Egg					
Vegetables					
Fruits					

B.5. Physical exercises

a) Are you doing any of the physical activities?

1) Brisk walking 2) Jogging 3) Cycling
4) Sports 5)Others 6) None

b) If yes , specify how many days in a week did you do the above mentioned activity?

1) One day 2) two days 3) 3 days 4) 4 days 5) 5 days
6) 6 days 7) 7 days

B6 sleep

a) How many hours in a day you used to sleep?

1) Less than 5 hours 2) 5 to 7 hours 3) More than 7 hours

C **History**

a) Do you have any of the following complaints?

1) Headache 2) Chest pain 3) Heart burn

4) Abdominal pain 5) Back pain 6) Joint pain

7) Pain in arms, legs 8) Neck pain 9) Fatigue

10) Visual impairment / wearing glasses

11) Hearing defect 12) loss of sleep

13) Breathlessness 14) others (specify) _____

b) Do you have past history of

1) Diabetes 2) Hypertension 3) Ulcer 4)others(specify)_____

c) Do you have family history of

1) Diabetes 2) Hypertension 3) others(specify)_____

D Examination

D1 Physical examination

1. Height
2. Weight
3. BMI
4. Pulse
5. Blood pressure
6. Vision
7. Hearing
8. Anemia
9. Clubbing
10. Edema

D2 Systemic examination

a) RS 1) NVBS 2) wheeze 3) crepitations 4) Rub
b) CVS 1) NHS 2). murmur 3) Rub
c) Abdomen 1) tender 2) fluid

D3 Urine test Routine by

a) Sugar 1) present 2) absent
b) Albumin 1) present 2) absent

சென்னை புறநகர போக்குவரத்து கழகம் (வரையறுக்கப்பட்டது) பேருந்து ஓட்டுநர்களின் சுகாதார இன்னல்களின் காரணிகள் மீது ஓர் ஆய்வு, சென்னை - 2014

வரிசை எண் :

பெயர் :

அலுவலக முகவரி :

அ. சமூக நிலை

அ1) வயது வருடங்களில்

1) 30க்கும் குறைவு அதிகம் 2) 31-40 3) 41-50 4) 50க்கும்

அ2) கல்வித் தகுதி

1) 10ஆம் வகுப்பு வரை பட்டப்படிப்பு 2) 12ஆம் வகுப்பு 3) பட்டயப் படிப்பு 4)

அ3) மொத்த அனுபவம் ஓட்டுநராக வருடங்களில்

1) 10க்கும் குறைவாக அதிகமாக 2) 11-20 3) 21-30 4) 30க்கும்

அ4) எவ்வகையான அனுபவம்?

1) பச்சைபலகை 2) வெள்ளைபலகை 3) மஞ்சள் பலகை

4)சிவப்ப பலகை 5) எண்முறை 6) குளிருட்டப்பட்ட பேருந்து

ஆ. வாழும்முறை காரணிகள் :

ஆ1) புகைபிடித்தல்

1) தற்சமயம் புகைபிடிக்கீறீர்களா?
   1) ஆம் தினமும் 2) ஆம்வாரம் ஒருமுறை 3) இல்லை
2) ஆம் எனில், எதை புதைக்கின்றீர்கள்?
   1) வெண்சுருட்டு 2) பீடி 3) மற்றவைகள்(குறிப்பிடுக).....
3) சராசரியாக எத்தனை குச்சிகள் புகைப்பீர்கள்?
   1) நாள் ஒன்றுக்கு..... 2) மாதத்திற்கு .....
4) முதன்முதலில் எந்த வயதில் புகைப்பிடிக்க ஆரம்பித்தீர்கள்?..... வயது

ஆ) II புகையற்ற புகையிலை உபயோகித்தல்

1) தற்சமயம் வெற்றிலை போடுகிறீர்களா?

1) ஆம் தினமும் 2) ஆம் வாரம் ஒரு முறை 3) இல்லை

2) தற்சமயம் வெற்றிலையுடன் புகையிலையையும் பயன்படுத்துகிறீர்களா?

1) ஆம் 2) இல்லை

3) ஆம் எனில் எவ்வளவு காலமாக புகையிலை கொள்ளுவதை மேற்கொண்டு உள்ளீர்கள்.....

4) ஒரு நாளைக்கு எத்தனை தடவை மேற்கூறியவற்றை எடுத்துக் கொள்வீர்கள்?.....,,

ஆ) III) மது அருந்துதல்:

1) மது அருந்துவீர்களா? 1) ஆம் 2) இல்லை

2) ஆம் எனில், எந்தவகையான மது?

1) பிராந்தி 2) விஸ்கி 3) பீர் 4) மற்றவை (குறிப்பிடுக).....

3) எவ்வளவு காலமாக மது அருந்துகிறீர்கள்?

..... மாதங்கள் ..... வருடங்கள்

4) வாரத்திற்கு எத்தனை நாட்கள் மது அருந்துவீர்கள்? .....

5) ஒரு நேரத்தில் எவ்வளவு மதுபானம் வழக்கமாக எடுத்துக் கொள்வீர்கள்?

..... ஆப்பு (60 மில்லி - பிராந்தி, விஸ்கி, மற்றவை)

..... கால் (180 மில்லி) ..... அரை (360 மில்லி) ..... பாட்டில்கள் (650 மில்லி - பீர்)

ஆVI) உணவு பழக்கங்கள்

1) தாங்கள்

1) சைவம் 2) அசைவம் 3) கலந்தது

2) எத்தனைமுறை தாங்கள் கீழ்காணும் உணவுகளை தவிர்க்க வேண்டி வரும்?

	(1) தினமும்	(2) 2 முதல் 3 நாட்கள் ஒரு வாரத்திற்கு	(3) 4 முதல் 5 நாட்கள் ஒரு வாரத்திற்கு
காலை உணவு			
மதிய உணவு			
மாலை உணவு			

3) பிரதான உணவுகளை தவிர சராசரியாக எத்தனை முறை தாங்கள் கீழ்காணும் வகைகளைஒரு நாளைக்கு எடுத்துக் கொள்வீர்கள்?

	(1) ஒரு முறை	(2) 2 முறை	(3) 3 முறை	(4) 3 முறைக்கு மேல்
காப்பி				
தேநீர்				
பால்				
சோடா				
பழச்சாறு				
மோர்				
பிஸ்கட்கள்				
முறுக்கு				
வடை				
போண்டா				
பஜ்ஜி				
சமோசா				

4) தாங்கள் கீழ்காணும் உணவு வகைகளை எத்தனை தடவை எடுத்துக் கொள்வீர்கள்?

	எப்பொழுதும் இல்லை	மாதம் ஒரு முறை	வாரம் ஒரு முறை	2-3 நாட்கள் ஒரு வாரத்திற்கு	தினமும்
கோழிக்கறி					
மீன்					
இறைச்சி					
முட்டை					
காய்கறிகள்					
பழங்கள்					

ஆV) உடற்பயிற்சி

1)தாங்கள் ஏதாவது உடற்பயிற்சிகளை செய்கின்றீர்களா?

1) வேக நடை 2) சிறு ஓட்டம் 3) மிதி வண்டி
4) தடகளம் 5) மற்றவைகள் 6) ஏதும் இல்லை

2) ஆம் எனில், ஏத்தனை நாட்களுக்கு ஒரு வாரத்தில் மேலே குறிப்பிட்டவைகளை செய்கின்றீர்களா?

1) 1 நாள் ஒன்றுக்கு எத்தனை மணி நேரம் உறங்குகிறீர்கள்?

1) 5 மணிக்கு குறைவாக 2) 5 முதல் 7 மணி வரை 3) 7 மணிக்கு மேல்

இ) வரலாறு

1) கீழ்கண்ட உடற்கோளாறுகளில் ஏதாவது தங்களுக்கு உண்டா?
1) தலைவலி 2) நெஞ்சுவலி 3) நெஞ்சு எரிச்சல்
4) வயிற்று வலி 5) முதுகு வலி 6) மூட்டு வலி
7) கை. கால்கள் வலி 8) கழுத்து வலி 9) சோர்வு
10) பார்வை கோளாறு/கண்ணாடி அணிதல் 11) காது கேளாமை
12) தூக்கமின்மை 13) மூச்சுத்திணறல் 14) மற்றவை (குறிப்பிடுக).....

2) தங்களுக்கு கடந்த காலத்தில் இவற்றில் ஏதேனும் உண்டா?
1) சர்க்கரை நோய் 2) இரத்த அழுத்தம் 3) வயிற்றுப்புண்
4) மற்றவை (குறிப்பிடுக)....

3) தங்களது குடும்பத்தில் எவருக்கேனும்

1) சர்க்கரை நோய் 2) இரத்த அழுத்தம் 3) மற்றவை (குறிப்பிடுக).....

D) **Examination**

D) Physical Examination

1) Height

2) Weight

3) BMI

4) Pulse

5) Blood Pressure

6) Vision

7)Hearing

8)Anemia

9)Clubbing

10)Edema

D2 Systemic examination

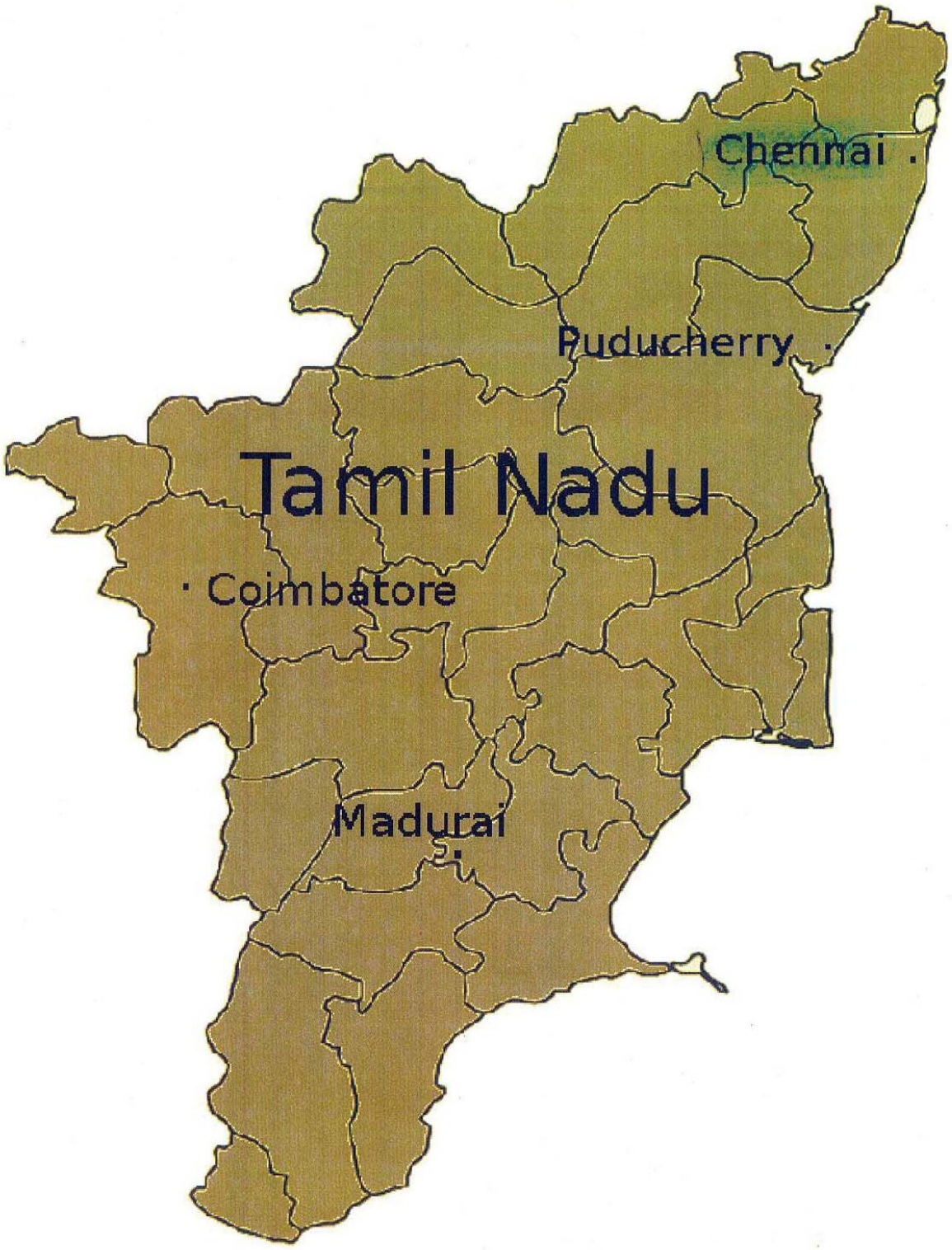
a) RS	1)NVBS	2) Wheeze	3) Crepitations	4) Rub
b) CVS	1) NHS	2) murmur	3) RUb	
c) Abdomen		1) Tender	2) Fluid	

D3 Urine test Routine by dipstick

a) Sugar	1) Present
b) Albumin	1) Present

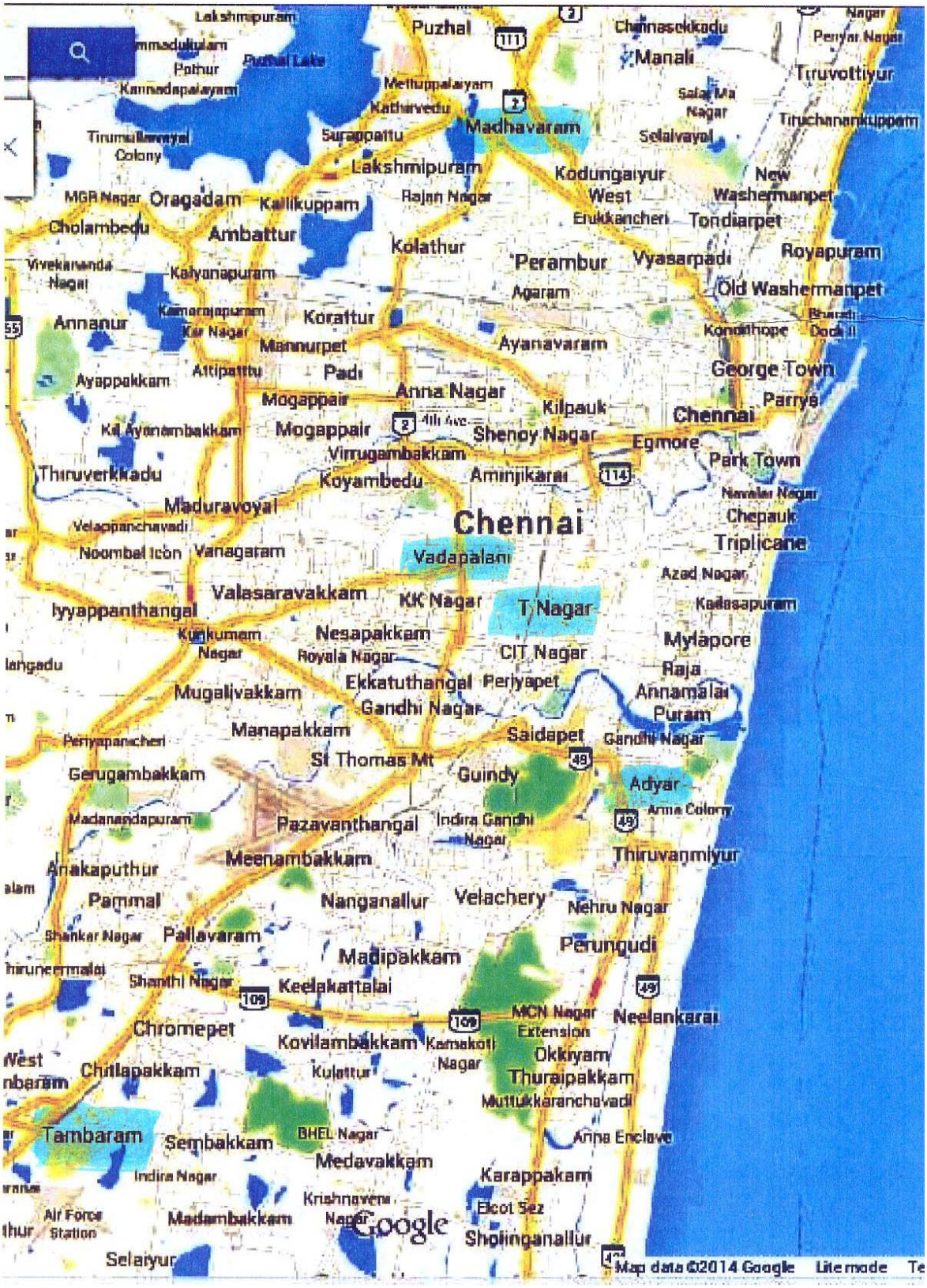
ANNEXURE 3

STUDY AREA TAMIL NADU MAP



ANNEXURE 4

AREA OF DEPOTS



ANNEXURE 5

LIST OF DEPOTS

List of Bus Drivers- Metropolitan Transport Corporation Chennai

SI.No	Name of the Bus Depot	No.of Bus Drivers
1.	Poonthamali	468
2.	Adayar	530
3.	Ambattur	462
4.	Anna Nagar	564
5.	Ayanavaram	421
6.	Vyasarbadi	344
7.	K.K.Nagar	488
8.	Madhavaram	351
9.	Mandhaveli	231
10.	Perambur	420
11.	Saidapet	337
12.	Tambaram	596
13.	Thiruvanmaiyur	400
14.	Thiruvetriyur	276
15.	T.Nagar	252
16.	Thandaripet 1	354
17.	Thandaripet 2	198
18.	Vadapalani	491
19.	Enoor	167
20.	Chrompet	410
21.	Iyyappanthangal	417
22.	Avadi	398
23.	Alandur	374
24.	Basin Bridge	112
25.	Central Depot	453
	Total	**9514**

ANNEXURE 6

KEY TO MASTER CHART

column	Variable	Lable of variable/question	values
A	Sno	Serial number	
B	Name	Name of bus driver	
C	Depot	Office address	
D	Age	Age in years	1)Less than 30 years 2)31 o 40 yrs 3)41 o 50 yrs 4)Above 50 yrs
E	Education	Educational qualification	1)Upto 10^{th} standard 2)Plus two 3)Diploma 4)Degree
F	Service	Total years of experience as drivers	1)Less than 10yrs 2)11 to 21 yrs 3) 21 to 30 yrs 4)Above 30 yrs
G	Types	Types of service	1)Green board 2)White board 3)Yellow board 4) Red board 5)Digital 6)AC bus
H	Smoking at present	If currently smoking	1)Yes daily 2)Yes once daily 3)No
I	Type of smoking	Forms of smoking	1)Cigarette 2) Bidi 3)Others
J	NO.of sticks per day	Number of sticks smoken on an average in a day	
K	NO.of sticks per month	Number of sticks smoken in a month	
L	Age of smoking	Starting age of smoking	
M	Smokless tobacco at present	Current tobacco use	1)Yes daily 2)Yes once a week 3)No
N	Betelnut with tobacco	Chewable tobacco with betel leaf	1Yes 2)No
O	Tobacco no.of years	Tobacco use in years	
P	Tobacco no.of times a day	Use of tobacco frequency in a day	

Q	Alcohol yes/no	Use of alcohol	1)Yes 2)No
R	Alcohol type	Type of alcohol	1)Brandy 2)Whisky 3)Beer 4)Others
S	Alcohol years	Alcohol use in years	
T	Alcohol frequeny in days	Alcohol frequency in	
U	Alcohol amount	Amount of alcohol per occassion	
V	Food habits	Type of food habit	1)Vegetarian 2)Non vegetarian 3)Mixed
W	Skipping meals morning	Skipping dinner	1)Daily 2)2 to 3 days in a Week 3) 4 to 5 days in aweek
X	Skipping meals afternoon	Skipping lunch	1)Daily 2)2 to 3 days in a Week 3) 4 to 5 days in aweek
Y	Skipping meals night	Skipping dinner	1)Daily 2)2 to 3 days in a Week 3) 4 to 5 days in aweek
Z	Coffee	Coffee intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AA	Tea	Tea intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AB	Milk	Milk intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AC	Soda	Soda intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AD	Juice	Juice intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AE	Buttermilk	Buttermilk intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AF	Biscuit	Biscuit intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AG	Murukku	Murukku intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AH	Vadai	Vadai intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AI	Bonda	Bonda intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times

AJ	Bajii	Bajii intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AK	Somasa	Somasa intake in a day	1)1 time 2)2 times 3)3 times 4) more than 3 times
AL	Chicken	Frequency of chicken intake	1)Never 2)Once a month 3)Once a week 4) 2-3 days a week 5) Daily
AM	Fish	Frequency of fish intake	1)Never 2)Once a month 3)Once a week 4) 2-3 days a week 5) Daily
AN	Mutton	Frequency of mutton intake	1)Never 2)Once a month 3)Once a week 4) 2-3 days a week 5) Daily
AO	Egg	Frequency of egg intake	1)Never 2)Once a month 3)Once a week 4) 2-3 days a week 5) Daily
AP	Vegetables	Frequency of vegetables intake	1)Never 2)Once a month 3)Once a week 4) 2-3 days a week 5) Daily
AQ	Fruits	Frequency of fruits intake	1)Never 2)Once a month 3)Once a week 4) 2-3 days a week 5) Daily
AR	Exercise type	Type of exercises	1)Brisk walking 2)Jogging 3)Cycling 4)Sports 5)Others 6) None
AS	Exercise days in a week	Frequency of exercise	1)1day 2)2days 3)3days 4)4days 5) 5days 6)6days 7)7 days
AT	Sleep	Hours of sleep per day	1)Less than 5 hours 2)5 to 7 hours 3)More than 7 hours
AU	Complaints	Complaints	1)Headache 2)Chest pain 3)Heart burn 4)Abdominal pain 5)Back pain 6)Joint pain 7)Pain in arms , legs 8)neck pain 9)Fatigue 10) Visual impairment/Wearing glasses 11)Hearing defect 12)Loss of sleep 13)Breathlessness 14)Others
AV	Past ho	Past history	1)Diabetes 2)Hypertension 3)Ulcer 4)Others
AW	Family ho	Family history	1)Diabetes 2)Hypertension 3)Others
AX	Ht	height	
AY	Wt	weight	

AZ	BMI	Body mass index	1)BMI less than 18.5 2)BMI 18.5 to 24.9 3)BMI 25 to 29.9 4)BMI 30 to 34.9 5)BMI 35 to 39.9 6)BMI more than 40
BA	Pulse	Pulse	
BB	BP	Hypertension	
BC	SBP	Systolic blood pressure	
BD	DBP	Diastolic blood pressure	
BE	Right eye vision	Vision in right eye	
BF	Left eye vision	Vision in left eye	
BG	Hearing	Hearing	1)Normal 2)Defective
BH	Anemia	Anemia	1)Yes 2)No
BI	Clubbing	Clubbing	1)Yes 2)No
BJ	Edema	Edema	1)Yes 2)No
BK	RS	Examination of respiratory system	1)NVBS 2)Wheeze 3)Crepitations 4)Rub
BL	CVS	Examination of cardiovascular system	1)NHS 2)Murmur 3)Rub
BM	Abdomen	Examination of abdomen	1)Tender 2)Fluid
BN	Urine sugar	Urine sugar	1)Present 2)Absent
BN	Urine albumin	Urine albumin	1)Present 2)Absent

ANNEXURE 7 - MASTER CHART

| S No | NAME | DEPOT | AGE | EDUCATION | SERVICE | TYPES | smoking | | | | | smokeless | | | | Alcohol | | | | | Food habits | | | | Snacks | | | | | | | | | | | | | | | | | food | | | | | | exercis | | sleep | complaints | past h/o | familyh/o | examimation | | | | | | | vision | | | | | Sys. Exam. | | | urine | |
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ANNEXURE 8

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI-3

EC Reg No.ECR/270/Inst./TN/2013
Telephone No : 044 25305301
Fax : 044 25363970

CERTIFICATE OF APPROVAL

To
Dr. Sasikaladevi,
PG in Community Medicine,
Institute of Community Medicine,
Madras Medical College, Chennai-3.

Dear Dr. Sasikaladevi,

The Institutional Ethics Committee of Madras Medical College, reviewed and discussed your application for approval of the proposal entitled **"A morbidity study of health risk factors of bus drivers of Metropolitan Transport Corporation Limited Chennai 2014"** No.25022014

The following members of Ethics Committee were present in the meeting held on 04.02.2014 conducted at Madras Medical College, Chennai-3.

1.	Dr. G. Sivakumar, MS FICS FAIS	-- Chairperson
2.	Prof. Kalaiselvi, MD Prof. of Pharmacology, MMC, Ch-3	-- Member Secretary
3.	Prof. Ramadevi, Director i/c, Instt. of Biochemistry, Chennai	-- Member
4.	Dr. Geetha Devadoss, Associate Professor of Pathology, MMC, Ch-3.	-- Member
5.	Prof. Dr. Sivasubramanian, I/c Director, Institute of Internal Medicine, MMC, Ch-3.	-- Member
6.	Thiru. S. Govindasamy, BABL	-- Lawyer
7.	Tmt. Arnold Saulina, MA MSW	-- Social Scientist

We approve the proposal to be conducted in its presented form.

Sd/Chairman & Other Members

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

Member Secretary, Ethics Committee

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE
CHENNAI-600 003

ANNEXURE 9

மாநகர் போக்குவரத்துக் கழகம் (சென்னை) வரையறுக்கப்பட்டது

ஒரு தமிழ்நாடு அரசு நிறுவனம்

METROPOLITAN TRANSPORT CORPORATION (CHENNAI) LIMITED

AN UNDERTAKING OF THE GOVERNMENT OF TAMILNADU

Lr.No: 17139/Admn(2)/IR/MTC/2013

Date : 29.12.2013

To

The Director,
Institute of Community Medicine,
Madras Medical College,
Chennai - 600 003

31/12/13

Sir,

Sub: MTC (Chennai) Ltd - Dr. S. Sasikaladevi. - Permission accorded to conduct study among Bus Drivers in M.T.C. - Reg.

Ref: Letter from Director, Institute of Community Medicine

With reference to your letter cited, we are pleased to permit Dr. S. Sasikaladevi, to conduct study among Bus drivers titled "A Morbidity study of health risk factors of bus drivers of Metropolitan Transport Corporation Limited, Chennai " in Metropolitan Transport Corporation (Chennai) Limited, Chennai - 600 002. (Subject to conditions).

Thanking you

Yours faithfully,
Metropolitan Transport Corporation Chennai) Limited

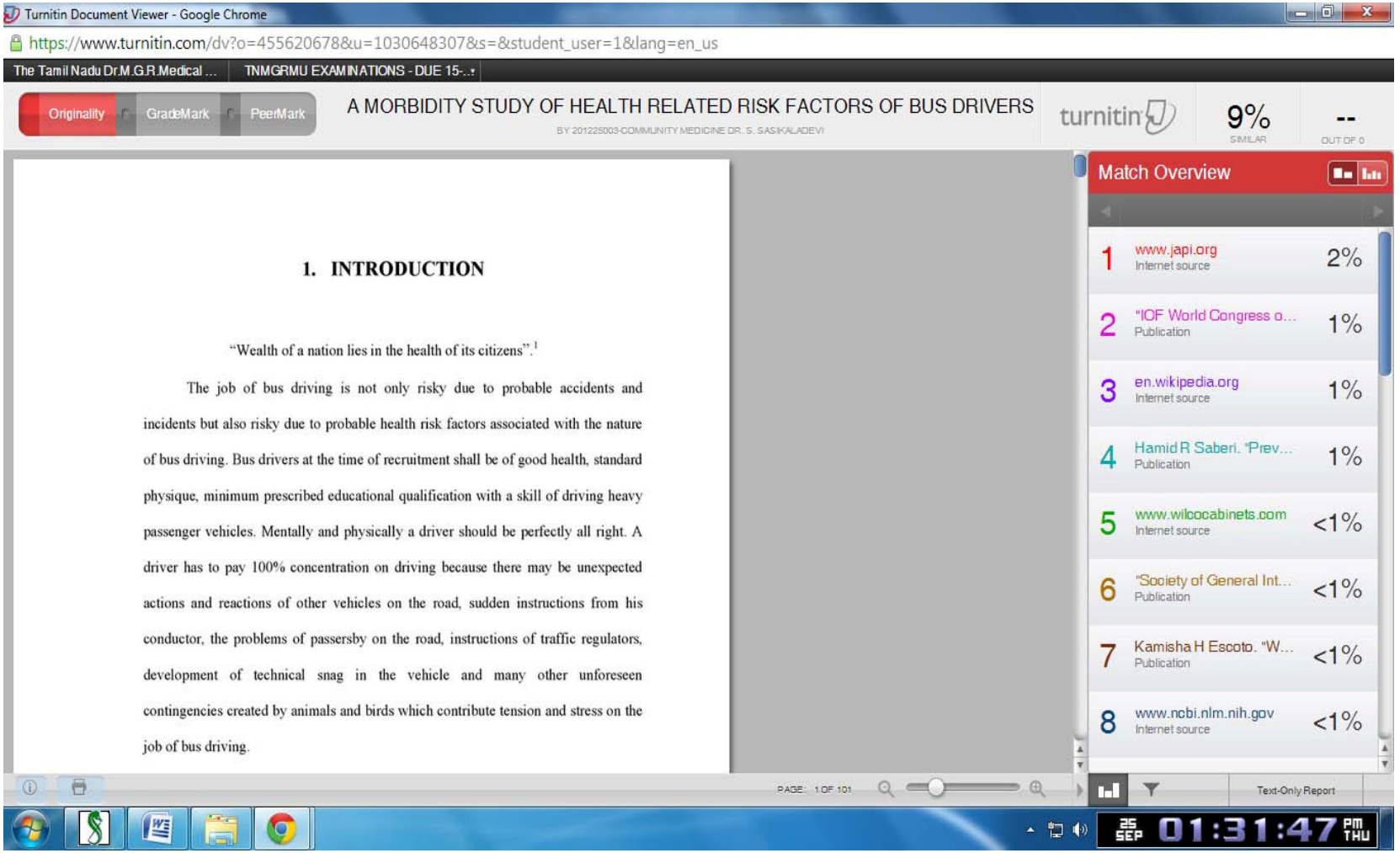
28/12/13

Senior Deputy Manager (HRD)

REGISTERED OFFICE :
Pallavan House,
Anna Salai, Chennai - 600 002.

Telephone : 23455801 (9 Lines)
Telegram : EMTECEBUS
Fax : (091) (044) 23455830

E-mail : mtc_edp@dataone.in
edp@mtcbus.org
Web : mtcbus.org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1. INTRODUCTION
"Wealth of a nation lies in the health of its citizens".[1]
The job of bus driving is not only risky due to probable accidents and incidents but also risky due to probable health risk factors associated with the nature of bus driving. Bus drivers at the time of recruitment shall be of good health, standard physique, minimum prescribed educational qualification with a skill of driving heavy passenger vehicles. Mentally and physically a driver should be perfectly all right. A driver has to pay 100% concentration on driving because there may be unexpected actions and reactions of other vehicles on the road, sudden instructions from his conductor, the problems of passersby on the road, instructions of traffic regulators, development of technical snag in the vehicle and many other unforeseen contingencies created by animals and birds which contribute tension and stress on the job of bus driving.
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ANNEXURE 10

Digital Receipt

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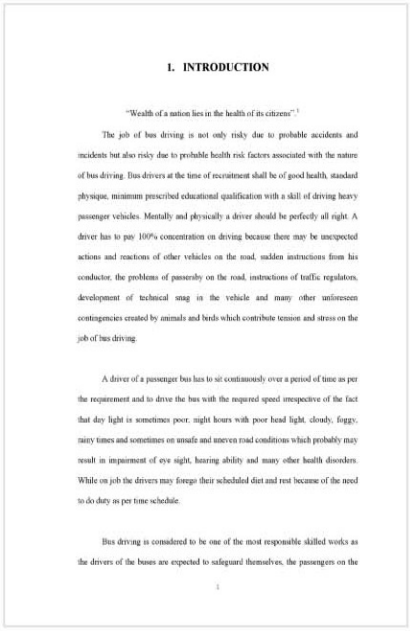

1. INTRODUCTION

"Wealth of a nation lies in the health of its citizens".[1]

The job of bus driving is not only risky due to probable accidents and incidents but also risky due to probable health risk factors associated with the nature of bus driving. Bus drivers at the time of recruitment shall be of good health, standard physique, minimum prescribed educational qualification with a skill of driving heavy passenger vehicles. Mentally and physically a driver should be perfectly all right. A driver has to pay 100% concentration on driving because there may be unexpected actions and reactions of other vehicles on the road, sudden instructions from his conductor, the problems of passersby on the road, instructions of traffic regulators, development of technical snag in the vehicle and many other unforeseen contingencies created by animals and birds which contribute tension and stress on the job of bus driving.

A driver of a passenger bus has to sit continuously over a period of time as per the requirement and to drive the bus with the required speed irrespective of the fact that day light is sometimes poor, night hours with poor head light, cloudy, foggy, rainy times and sometimes on unsafe and uneven road conditions which probably may result in impairment of eye sight, hearing ability and many other health disorders. While on job the drivers may forego their scheduled diet and rest because of the need to do duty as per time schedule.

Bus driving is considered to be one of the most responsible skilled works as the drivers of the buses are expected to safeguard themselves, the passengers on the

1